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of The AMERICAN DIETETIC ASSOCIATION

SEPTEMBER, 1961 VOLUME 39 NUMBER 3

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Claire F. Ryder

Nutrition in Home Care Programs
Geraldine M. Piper

Energy-Saving Kitchens
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Energy Used in Homemaking
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Interpreting Metabolic Data
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Calcium and Phosphorus Retention
Frances A. Johnston and Rebecca A. Folsom

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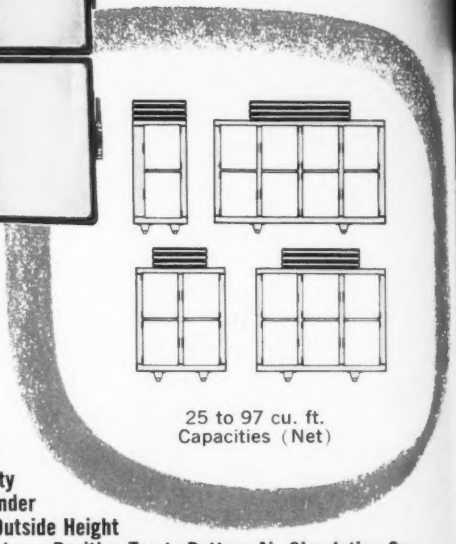

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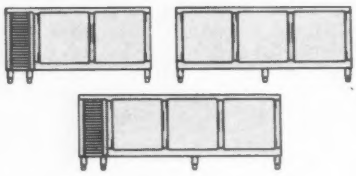

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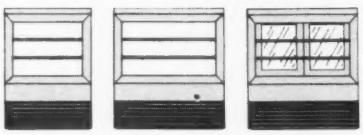

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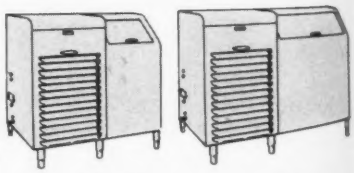

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A Decalogue of Challenges: Chronic Illness and Disability[1]

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ILL HEALTH and the threat of acute or chronic illness in later years constitute an area of major concern in the consideration of the health needs of our senior citizens. This fact was stressed by the Senate Subcommittee on Problems of the Aged and Aging in its report (1) issued after a year of intensive study of the many-faceted problems of aging.

According to the National Health Survey (2) conducted by the U.S. Public Health Service, acute conditions account for 189 million days of restricted activity among persons sixty-five years of age or over. This represents a rate of 1,302 days per 100 persons a year among the elderly, compared with 1,127 days per 100 persons a year for the rest of the population.

The extent to which the aged are affected by chronic illness and disability is dramatically revealed by the findings of the National Health Survey. Nearly eight out of ten of the 14½ million non-institutionalized aged in our population—a total of 11 million persons sixty-five or older—are affected by a chronic disease (3). The disabling effects of chronic illness are reflected in the fact that more than 6 million in this age group—or 43 per cent—suffer limitations of activity, and of this number, more than 2 million are unable to carry on their usual activities of daily living without assistance.

Summing up the problem, the Senate Subcommittee on Problems of the Aged and Aging reports: "The residuals (after effects) of chronic illness which produce limitations of activity and impair the ability to get around, together with increased demand for health services, thus constitute a significant dimension of the health problem of the aging and aged, *and for that reason a public health problem of prime magnitude for the entire population.*"

The terms "chronic illness" and "old age" are often used synonymously, implying a permanent linkage. This is misleading. The relationship between the two terms has been described in this way: "The rule of thumb by which we should consider the challenges is that chronic illness is being sick a long time; old age is living a long time."

Granted the terms cannot be used interchangeably because chronic illness and disability affect persons in all age groups and because chronic illness is not necessarily a by-product of old age. Nevertheless, there is a disproportionately high incidence of such conditions among the middle aged and elderly. And the dilemma faced by the aged is that long-term illness is most likely to come at a time when they can least afford the high cost of needed medical care and when they have the least health insurance protection.

Because the problems involved are admittedly complex, we tend to take a defeatist attitude, figuring that little can actually be done to resolve them. This attitude is unrealistic, in view of the progress which has already been made in preventing and treating chronic illness and disability. Many additional milestones of progress can be achieved if we would but make the effort.

Analysis of the many faceted problems relating to chronic illness and disability among the aged and suggestions as to areas where positive action pro-

[1]Based on a joint presentation by the author and Elizabeth Caso, Cambridge (Massachusetts) Department of Public Health, at the 43rd Annual Meeting of The American Dietetic Association in Cleveland, on October 19, 1960. Mrs. Caso's paper will appear in a later issue of the JOURNAL.

grams are needed—for prevention as well as medical care and related services—are contained in this "Decalogue of Challenges."

Prevention of Chronic Illness

The prevention of chronic illness can be considered on many levels, but a helpful manner of classifying preventive services is to think of prevention of disease, decay, death, disability, and dependency.

CHALLENGE NO. 1—PREVENTION OF DISEASE

It is a mistake to assume that nothing can be done about preventing chronic diseases until more is known about their etiology. There is growing evidence that in some areas break throughs are here already or will be available shortly.

Here are a few specific examples of break throughs already accomplished. We know that fluoridation of the water supply will reduce substantially the incidence of caries. We know that primary prevention of accidental death can be accomplished through simple measures of community effort, such as campaigns to promote the use of seat belts in automobiles. We know that it is possible to prevent the onset of rheumatic heart disease through prophylactic care of the child who has or has had rheumatic fever.

Although further research is needed in most instances to provide definitive answers to the prevention of chronic disease, existing knowledge should be utilized in developing preventive measures. For example, we must weigh the evidence and give consideration to: studies which indicate that weight control is beneficial in the control of heart disease and diabetes; research findings suggesting that the use of a fat-controlled diet and polyunsaturated fatty acids may be of value to some individuals as a means of lowering blood cholesterol; and studies which give evidence that preretirement counseling programs can help to insure positive mental health in later years.

The challenge is to apply the knowledge that is *currently available* instead of delaying action until *all* the answers have been supplied.

CHALLENGE NO. 2—PREVENTING PROGRESS OF DISEASE

Realistically, we must admit that at present, prevention in the field of chronic illness relates not so much to preventing the disease itself as it does to preventing disabling after-effects through early detection and treatment. There is universal agreement that the mightiest weapon in the chronic disease area is early detection—*before* complications have set in and when the disease is most amenable to treatment. It is then that we can take greatest advantage of existing knowledge on how to prevent or minimize secondary complications and the common disabling after-effects.

The challenge is all the greater since many chronic diseases have an insidious onset, with no obvious symptoms. When pain and discomfort compel the individual to seek medical attention, the chances are that the disease has already had a running start.

The National Health Survey revealed that 34 per cent of the elderly have not seen a physician for two years or more. These data lend added urgency to the need for developing at the community level programs to screen for hidden disease.

Screening methods have been successfully used as a case-finding tool for the following diseases:

Diabetes. There are approximately 1,400,000 cases of undetected diabetes. Since untreated diabetes is a progressive disease, early diagnosis and treatment is vitally important in its control and in preventing disabling complications. At present, twenty-four states, fifteen cities or counties, and three territories are conducting organized diabetes detection programs. In addition, the American Diabetes Association sponsors thousands of tests each year.

Glaucoma. There are approximately 1,200,000 cases of undetected glaucoma. This serious eye disease causes from 12 to 14 per cent of all blindness occurring among adults. At present, ten health departments are involved in glaucoma detection, and a few programs are being sponsored by other groups.

Tuberculosis, lung neoplasms, heart disease. Active unknown tuberculosis is estimated to affect about 100,000 persons, and 300,000 persons have significant inactive disease that is unknown to health officials. Of considerable significance is the trend to regard chest x-rays as an important method of finding new cases of heart disease, cancer, and other diseases of the chest in addition to tuberculosis.

Cancer of the uterus. At least thirteen state health departments are engaged in cervical cancer detection programs which usually consist of the processing and examination of slides sent in by physicians. A study conducted in Tennessee revealed findings of previously undiagnosed carcinoma *in situ* or invasive carcinoma of the cervix in approximately one out of every one hundred women examined.

Hypertension. In screening programs in which a blood pressure test was offered, from 10 to 25 per cent of adults examined had elevated readings.

Kidney disease. Certain types of kidney disease can be detected through examination of urine for albumin plus microscopic examination of urine sediment. Both are simple procedures. Figures on prevalence are not available, but chronic kidney disease is the thirteenth cause of death in the United States.

In addition to screening programs, other community measures which can be taken to safeguard the

health of the aged include programs for periodic health appraisals and the so-called "well-oldster conferences." Challenging us is the limited development of such programs or their restricted use.

CHALLENGE NO. 3—PREVENTION OF DISABILITY

It is a jolting fact that much of the disability we presently see among the chronically ill aged could have been avoided had early, aggressive restorative therapy been applied. The philosophy behind mobilization of the chronically ill can be paraphrased in the title of an article written several years ago, "The Dangers of Going to Bed" (4). In other words, the disease itself is not the hazard in a majority of cases; many of the complications stem from the fact that the person has been immobilized following the clinical onset of the disease. Immobilization has led to atrophy of muscles, contractures, stiffness and soreness of joints, incontinence, and subsequent bed sores. If such after-effects are produced by immobilization, then it follows *ipso facto* that mobilization can prevent such complications.

An indication of the amount of unnecessary disability occurring because of immobilization can be found in the study of eight arthritic patients who were admitted to the Clinical Center of the National Institutes of Health, U.S. Public Health Service. None had been able to walk for five or more years, but all had been under continuous medical supervision and had received approved chemotherapy. After six months of physical therapy, all were ambulatory. Had such therapy been started at the beginning of the illness, much of the crippling could have been avoided.

According to Dr. Theodore J. Bauer, Chief, Bureau of State Services, U.S. Public Health Service (5), such instances "do not reflect upon the physician services given to the chronically ill and disabled. But they do point up the need for total service—those many services needed to supplement and support the physician care."

The Public Health Service has developed two booklets—"Strike Back at Stroke" (6) and "Strike Back at Arthritis" (7)—designed to bring to the patient and his family the simple procedures that will provide a means of mobilizing the patient wherever he may be, whether in the hospital, nursing home, or his own home. These booklets, to be prescribed by the family physician, outline such things as bed positioning, passive and active exercise, and ambulation techniques.

Clearly we are challenged to develop programs that will provide the vitally needed restorative services to the chronically ill.

CHALLENGE NO. 4—PREVENTION OF DEPENDENCY

Independence or dependence of the individual involves more than economic considerations. The far-reaching effects of physical, social, and emotional independence must not be overlooked. Dependency in one of these categories tends to encourage dependency in other categories; conversely, success in attaining independence in one sphere can pave the way to independence in other spheres. For example, when we make it possible for the formerly bedfast patient to become physically independent, we also open new avenues of social, emotional, and possibly even a certain degree of economic independence.

The age of the patient is an important factor in determining the end goal of restorative services. The young person tends to be resilient, amenable to rehabilitation services, and often can be restored to full employment. For the older person, restoration to full employment is not generally feasible. Also, the time and energies required for needed restorative services are far greater for the elderly than for the young. This, however, does not lessen the effectiveness of the end results of such services for the chronically ill aged. Restoring the elderly bedfast individual to the point of independent living—even if this is only to permit him to care for his own personal needs—means restoring to him a large measure of human dignity and self-respect.

To what extent can dependency be diminished? In his testimony before the Senate Subcommittee on Problems of the Aged and Aging, Dr. Alfred Kraft, Assistant to the Director of the John J. Kane Rehabilitation Center, Pittsburgh, said (8): "I am convinced that a national fact-finding survey would indicate the existence of many thousands of persons who are needlessly maintained in a state of total incapacity and bedfastness, only because the restorative procedures known today have not been made available. Kane Hospital can demonstrate that at least one-half of the totally disabled newly admitted patients have some degree of rehabilitation potential, and that three-fourths of these can be restored to at least some significant level of independence, including a substantial number who can return to comfortable private life."

From a dollars-and-cents point of view, this principle of restorative services for the aged has led to considerable savings at the community and state levels. A recent study in New Jersey (9) gives tangible evidence of this. Rehabilitation services were provided to 177 county hospital patients, restoring them to the point at which they could be discharged to less costly facilities—some to their own homes and a few to self-sufficiency in terms of jobs and incomes. This procedure is estimated to have saved $400,000 within the first year and a half of the project.

Care Services

CHALLENGE NO. 5—INSTITUTIONAL CARE

When consideration is given to the problems of

medical care for the older chronically ill individual, attention is turned to one of the most crucial areas —care in long-term institutions, such as nursing homes and homes for the aged. A word picture of the individuals in such homes will validate the concern professional persons are showing and help to determine the goals and approaches to be made in this area. Of the nearly half a million persons in nursing homes and homes for the aged, the median age is eighty years. Over a half are disoriented at times, less than half can walk alone, one-third are incontinent, two-thirds have circulatory disorders (10).

Obviously, the first approaches in this area have been in terms of food, shelter, and basic nursing care as well as improvement of patient care. At the community level, we find increasing emphasis on the development of more stringent licensing programs for nursing homes, consultation services, educational programs for nursing home personnel, and programs for the training of nurses aides in nursing homes.

For institutions where good basic nursing services are provided, the challenge lies in advancing to the next step—the provision of rehabilitation and restorative services to help such patients achieve the highest possible level of independent living.

CHALLENGE NO. 6—OUT-OF-INSTITUTIONAL CARE

The sixth challenge evolves from growing evidence that the proportion of older individuals who can and should be cared for in long-term institutions has remained relatively constant at about 5 per cent of those over sixty-five years old.

Two additional facts relate to this sixth challenge. First, it has been found that in general hospital populations, up to 20 per cent of the long-term patients do not need the intensive care services of the general hospital. Such patients remain in the hospital, for social, not medical reasons. In the John J. Kane Rehabilitation Center mentioned earlier, some four hundred patients could be discharged if there were a place in the community for them to go. A well organized home care program would make it possible for most if not all of these 400 patients to leave the hospital, freeing the beds for those on the waiting list, many of whom suffer serious set backs because of delay in admittance. Second, studies of community needs indicate that 70 to 75 per cent of the chronically ill are already in their own homes and are receiving no medical services at all, or are receiving only minimal inadequate services.

The solution is not to build more and more institutions and more and more beds. The challenge is to find ways and means of providing care outside of institutions, either on an out-patient, ambulatory basis or providing services in the home for the homebound. The latter vary in intensity and organizational patterns from the more simple home nursing and homemaker programs to those in which multiple services are provided, such as in home care services or coordinated home care programs. In recent years, increased attention has been focused on developing coordinated home care programs at the community level. Such programs are centrally administered and provide coordinated services to selected patients in their own homes, based on careful evaluation and planning of total patient needs (11).

CHALLENGE NO. 7—NEED FOR ANCILLARY PERSONNEL

The shortage of professional workers for health and medical care is a challenge that faces all groups of health personnel. To meet this challenge, a two-pronged approach is necessary. The existing professional personnel must be used to their greatest advantage, with no waste of their time and talents. The impact of such professional personnel can be extended if they are provided additional help to leave them free to serve as supervisors, administrators, consultants, and trainers of ancillary personnel who can take on the burden of certain types of care.

Such ancillary personnel as homemakers and nursing aides are very much needed. However, before use can be made of their services in the most practical and logical manner, there is further need for delineation of their roles and responsibilities and plans must be made for their training.

CHALLENGE NO. 8—COORDINATION OF PROGRAMS

In many communities, there exists today not a dearth of services but rather a plethora, with duplication and overlapping in some services and lack of coverage in other vital areas. In one community of 100,000, for example, a recent survey showed that there were over two hundred agencies, programs, and services provided for the chronically ill and older individual.

The chronicity and multiplicity of disease in the older person, coupled with the variable needs of the chronically ill, require a multitude of services and facilities at the community level. However, to be most effective, to eliminate duplication and prevent gaps in services, specialized services and facilities must be provided within the community in a coordinated and integrated fashion.

Coordinated programs have been developed in some communities through utilization of such devices as standard referral forms, information services, resource directories, and central information and counseling services. For the most part, however, this has been accomplished on a piecemeal basis.

There is an urgent need to develop over-all coordinated programs that have a logical and direc-

tional pattern. A careful study at the community level is needed to determine how well the local needs are being met, to identify gaps and overlapping of programs. An over-all community health plan should provide for the lacking services and facilities on the basis of a priority schedule and should eliminate duplication of services. Such planning and study will take time, skill, and patience, but should lead to action that fits into the total pattern of the community.

CHALLENGE NO. 9—NEED FOR RESEARCH

For the most part, research on chronic illness has been of a clinical or basic nature. No one would quarrel with the fact that these research programs should be continued; in fact, they should be increased where feasible.

Our challenge lies in the fact that much of the information and knowledge uncovered by these research programs has not sifted down to the grass roots level. A way must be found to bridge the gap between available knowledge on the treatment of chronic illness and its application.

More research of the "little r" type is also needed —administrative and applied research, demonstrations and studies to provide us with the how-to-do-it type of answer. The solutions to such problems will not be found in the laboratory; they will depend on conscientious investigation and analysis by the personnel of community health organizations. In some instances, communities have been assisted by universities carrying out this type of study. However, responsibility for initiating and following through rests squarely with health authorities at the local level.

CHALLENGE NO. 10—FINANCING

The tenth and last challenge is one that could be called the "$64,000 question." It relates to the financing of all these services and programs. Attention, through federal legislation, to financing the cost of medical care for older persons has overshadowed this most basic problem, i.e.: of what avail is it to any individual to have the ability to pay for services if these services are not available in the community?

Therefore, the challenge of today in terms of financing is not only the individual payment for medical care services, but is also the development and financing of community services. We do not need a slide rule approach to find that we are lagging far behind with respect to the provision of community services. In all of the United States today, there are no more than 5,000 persons being cared for in coordinated home care programs, and only 3,000 families receiving homemaker services as of any day in the year. Relating this to the tens of thousands and perhaps hundreds of thousands of individuals needing these services, one can feel that this challenge is perhaps greatest of all. We have the means for carrying out these programs; we have the knowledge and ability to do so. We must now find the financial support for such programs at the community level.

Conclusion

These are the ten challenges of an aging population. Although not synonymous with age, they are essentially related to chronic illness. Until such time as we can find answers to the riddle, "What *is* age and the aging process?" we need to work in this area of chronic illness. A concerted, coordinated program will not only meet the needs of the elderly, but directly and indirectly will benefit Americans of all ages.

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Nutrition in Coordinated Home Care Programs[1]

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THE INCREASING number of older people in our population has as its concomitant an increasing amount of chronic illness. This is resulting in changing needs and patterns of health and medical care of the aged and chronically ill. To meet the problems, various services and facilities are being established. These vary from promotion of health of the aged by means of nutritional counseling, health appraisals, and guidance to programs of care including coordinated home care, nursing services in the home, restorative medical services, homemaker services, "meals-on-wheels" programs, and nursing homes and homes for the aged.

The purpose of this paper is to consider coordinated home care programs and nutrition as part of the care spectrum.

Definition of Coordinated Home Care

Home care programs are not new. As early as 1796, the Boston Dispensary provided physician care in the homes of the sick poor. Home care always has been an integral part of the practice of medicine and, for many years, of public health nursing. More recently, however, increased attention has been focused on what is being termed "organized or coordinated home care programs." Professional leaders in health and medical care are indicating that a coordinated home care program is a highly desirable way to provide comprehensive medical care to patients.

These programs are defined as being centrally administered and providing coordinated medical, nursing, social, and related services to selected patients at home on the basis of integrated evaluation and planning. Nutrition and dietary counseling are considered essential parts of such a comprehensive, multidisciplinary care program. Using this definition as a criterion, a national inventory was made by the American Medical Association, American Hospital Association, Blue Cross Commission, Blue Shield Medical Care Plans, and the Public Health Service to determine the number of such programs currently in operation. The "Preliminary Summary of Home Care Program Inventory," prepared by the Public Health Service, lists thirty-seven programs which, to date, are providing daily care for over three thousand patients (1). This is a very small number when one considers the number of hospital and nursing home beds throughout the country and the number of chronically ill and aged who are homebound.

At a Workshop on Home Care in Chicago in April 1960, sponsored by the same five national groups, benefits of coordinated home care programs were described. They permit better use of hospitals, better health care for patients in the home environment, preservation of family unity (which is so often disrupted by a long illness), and maximum restoration of physical function through continued care.

The majority of patients served by coordinated home care programs are women of indigent or low income status. The age of the patients served assumes no discernible pattern. The patient "stay" in the programs appears to be relatively long, ranging from six to twelve months (2). There seem to be two general patterns of administration. One is through community agencies, such as Visiting Nurses' Associations or local official health agencies; the other is through hospitals, as an extension of hospital care. Whether the programs are community- or hospital-based, home care is given under medical supervision.

Nutrition Services in Coordinated Home Care Programs

According to the "Preliminary Summary" men-

[1]Presented at the 43rd Annual Meeting of The American Dietetic Association in Cleveland, on October 19, 1960.

tioned previously, thirty-four of the thirty-seven programs have part-time nutrition services available from resources within the central administration or one of the cooperating agencies. The remaining three programs do not provide nutrition services; however, two programs accept only patients with specific disease conditions (tuberculosis and "strokes"). This "Inventory" was not designed to indicate *who* of the multidisciplinary team had given services to the patient, the *extent* of direct services provided, or the *kind* of services needed, such as diet therapy or counseling on normal nutrition.

However, earlier studies do identify to some extent the amount of nutrition services used, and additional information is to be collected nationally in the future. A study of nineteen programs in New York City revealed that less than 2 per cent of the patients had received the services of a dietitian (2). The Detroit program showed 18 per cent of the patients utilized diet therapy services (3). A ten-year study of the Philadelphia Home Care Program indicated nutrition consultation was provided to 36 per cent of the patients, and within a twelve-month period, to 49 per cent of the patients (4, 5).

Even though the number of existing coordinated home care programs and their patient loads are small, the fact remains that these programs are being organized as part of the spectrum of medical care. With the enactment of Public Law 86-778 to encourage states to provide a wide range of medical assistance to aged people with low income, often spoken of as the MAA (Medical Assistance to the Aged) program, it is probable that coordinated home care programs as well as the number of patients in these programs will increase. Dietitians and nutritionists must be alert to the existence or development of such programs in their communities and should be prepared to offer their professional services.

Dietitians and Nutritionists in Home Care Programs

What should be the role of dietitians and nutritionists in coordinated home care programs?

The philosophy and objectives of coordinated home care need to be well understood if the dietitian and nutritionist are to function effectively as members of the multidisciplinary team. Whether the program is hospital- or community-based, the formally structured coordinated team is responsible for making an initial admission evaluation of the applicant, planning for and implementing the services needed, periodically reviewing the patient's progress, and carrying out the final discharge conference for each patient. The role of the dietitian or nutritionist on the team is largely a consultative and supportive one. In home care programs, she rarely has direct contact with the patients. The following are examples of functions of the nutritionists and dietitians:

(a) Participation as a team member in the planning conference about the patient at the time of admission to a home care program. At this conference, the patient's detailed medical, nursing, socio-economic, physical, and emotional needs are evaluated. Information about current food habits and diet, financial allowance for food, and home conditions should be ascertained before dietary guidance can be given. Such information is incorporated in the program's patient record and is the basis for planning home care services to meet his needs.

(b) In-service staff education. Since the dietitian or nutritionist seldom goes into the patient's home, she should encourage and arrange for follow-up conferences with the nurses and other members of the home care team to interpret and give guidance regarding the patient's dietary needs. Because conferences on individual patients are time-consuming, it is well to promote in-service staff education which will cover general food needs and ways to adapt to existing food patterns.

(c) Participation in the team's periodic discussions and review of the patient's condition. Follow-up is needed to keep alert to his changing needs in order to maintain continuity of care from the standpoint of dietary needs. Also, other members of the team need to know the dietary and nutritional objectives for the patient, since food is a common topic of conversation when team members go into the home.

(d) Record keeping. Good records are vital to the effectiveness of any program. They should include pertinent information about the patient's food patterns and eating habits. This information may have been obtained from conferences held with individual members of the home care team regarding the dietary care of a patient. The interpretation of the physician's dietary prescription should be recorded, along with notes on any educational leaflets or booklets given to the patient. It is extremely important that everyone concerned with the patient be kept informed of the activities of each of the others.

Records of the time (preparation, conferences, telephone calls) given to the home care program also provide information of particular importance when trying to establish new staff positions and/or estimating the cost of nutrition services.

(e) When patients are transferred to a home care program from a hospital, dietary information should be included in the referral form. A cooperative working relationship between hospital and home care program is well illustrated by the program in Westchester County, New York. The nutritionist in the Westchester County Health Department and the

dietitians of Grasslands Hospital, by working together, strengthen the educational aspects of the program with regard to both normal nutrition and modified diets (6).

Professional Education

Dietitians and nutritionists responsible for professional education should consider the potential educational value of field work for dietetic interns and students in public health nutrition in coordinated home care programs. Such experience in the hospital-based or community-based coordinated home care program can offer students an opportunity to: observe a multidisciplinary approach to care, give service and/or observe patient care in home settings, observe family interrelationships and their effect on patient care and treatment, and become familiar with community resources for meeting patients' needs. To make the experience meaningful to the student and to safeguard patient care, there must be conscientious supervision, frequent individual and group discussions with the various disciplines participating in the home care program, and a structured method by which the student is helped to integrate and to understand the significance of her observation and services.

Summary

Coordinated home care programs are centrally administered through community agencies or through hospitals as an extension of hospital care. Medical, social, nursing, and related services are provided to selected patients in the home on the basis of integrated evaluation and planning. The basic philosophy of coordinated home care is that no one professional discipline can provide all the necessary care and that it involves a multidisciplinary approach.

There is an urgent need for the dietitian and nutritionist to be alert to existing and developing coordinated home care programs in the communities. She should become an active participant of the multidisciplinary team which provides services to patients.

Coordinated home care programs should be used, where feasible, for educational field work experience for dietetic interns and students in public health nutrition.

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What Are Ulcer Diets?

What is the current practice pertaining to ulcer diets? To find out, the Diet Therapy Section of the Wisconsin Dietetic Association surveyed hospitals in that state. Questionnaires pertaining to the most advanced ulcer diet were returned by thirty-six hospitals of 100 beds or more. Tabulation of the replies indicates little harmony on the subject.

The foods included for the ulcer diet by the majority of these hospitals are: whole cooked or canned fruits without seeds or skins, ripe bananas, plain cookies and cakes, crisp bacon, whole cooked tender vegetables without skins or seeds, decaffeinated coffee, and hard candy in moderation. Only one hospital reported giving ground meat on the advanced ulcer diet, and none on the discharge diet.

Items most frequently omitted are: fresh pork, ham, raw lettuce, nutmeg, and weak coffee.

Other food items fell into the classification of being "neither fish nor fowl," with almost an equal number of hospitals serving and omitting them on the ulcer diet: fine rye bread, chocolate desserts, mild cheese (in cooked form), tomatoes in strained cream soup, and tomato juice.

It may be concluded from this survey—as from many others—that there is little standardization of ulcer diets. A lack of scientific knowledge is, of course, the main cause of confusion. Dietitians and clinicians must wait on further research in physiology, biochemistry, and therapeutic nutrition to solve these problems.—*From the Summer, 1960 issue of The Wisconsin Dietitian.*

A Basic Approach to Design of Work Areas

Energy-Saving Kitchens[1]

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Although the research described by the author was directed to the design of home kitchens, the principles developed will be useful to those concerned with planning institutional kitchens

TODAY WE CAN approach the designing of kitchens with a greater fund of research-based guides than ever before. In the Institute of Home Economics, we have, in the past six years, developed and tested three kitchens which we call energy-saving kitchens because our principal goal was to keep to a minimum, through design and arrangement, the human energy required for preparing and serving family meals. This research on kitchen design was stimulated by the need for special planning for the millions of aged or handicapped homemakers for whom conservation of energy is a real need. In developing the designs, we have used all available applicable information on the human energy required for performance of household tasks, including storage.

The following summary of a few of these basic studies as they relate to kitchen design is presented as background for our development work.

Energy Needs for Household Tasks

When we started to develop the kitchens in 1954, Bratton at Cornell University had completed her study (1) of the oxygen consumed during the performance of eight component activities of household tasks. Her results indicated the limits of comfortable reach for women of average height. Mize projected the Bratton data (2) and developed energy index values for reaching from 40 to 73 in. and 8 to 37 in. from the floor. She concluded that the space relatively easy for most women to use is between 27 and 63 in. from the floor. At our own laboratories in Beltsville, research in energy expenditures had already been started by McCracken and Richardson, and some of the unpublished findings were available for use in designing our first kitchen.

One phase of the Beltsville research on energy requirements had been directed toward establishing recommendations for installation heights for wall ovens (3). Women of average height whose basal metabolism was within the normal range served as subjects. Following a standardized procedure, they placed a 15-lb. load on oven racks set at different heights, ranging from 16 to 44 in. from the floor. Energy expenditures were determined from measuring total pulmonary ventilation and the oxygen content of the expired air.

No significant difference was found in the energy required to place the load on and remove it from oven racks between the heights of 28 and 40 in. from the floor. For heights outside these limits, significantly more energy was required. Therefore, it was concluded that for women of average height, ovens should be installed so that the most used rack positions are from 28 to 40 in. from the floor.

A later phase of the research by McCracken and Richardson (4) was concerned with heights and design of storage facilities. There were three parts as follows: (a) subjects standing and using both hands to place a 5-lb. load on and remove it from shelves of an open floor cabinet; (b) subjects sitting and standing to place and remove a 1-lb. load with one hand and a 5-lb. load with two hands from shelves above 36-in.-high counters of various depths; (c) subjects standing and placing a fry pan on and removing it from storage areas of different designs—a hook on the wall above a 36-in.-high surface, the fixed top shelf, the top pull-out shelf of a conventional base cabinet, and the top shelf of a revolving base cabinet.

The findings in this study, especially pertinent for storage areas to be used by women of average heights, led to the following recommendations: (a) For storage of frequently used items and those requiring two hands for placement and removal, shelves in floor cabinets should not be lower than 28 in. or higher than 52 in. from the floor. (b) For storage of lighter weight

[1]Presented at the 43rd Annual Meeting of The American Dietetic Association in Cleveland, on October 19, 1960.

Over-all view of first kitchen design. Revolving, 7-ft. high cabinet for staples is in corner (closed). Accordion-type door is used to close off dish cabinet at left. A recess below the mix counter is provided for the posture chair.

Detail view, showing opened accordion-door of second cabinet.

Close-up view of sink and work area. Note drop bins and open sliding doors for small storage above sink.

objects or those less frequently used, shelves may be between 20 to 28 in. and 52 to 68 in. from the floor.

Recommendations for floor cabinets do not apply to wall cabinets over a counter since the height of the reach, the extent of the reach-over, and whether the subject was standing or sitting influenced the energy requirements. In a work center planned for stand-up work only, the energy expenditure studies led to these recommendations: (a) Shelves above a standard base cabinet 25 in. deep and 36 in. high can be as shallow as 4 in. up to a height of 52 in. and can be used for items that are heavy enough to require two hands for placement and removal. (b) Lightweight packages can be stored on shelves as high as 72 in. but the reach across the counter to shelves at this height is limited to 11 in. For shelves at 68 in., the minimum depth is 8 in.

In a work center planned for sit-down work, it was found that shelves as shallow as 4 in. can be used up to a height of 60 in. from the floor. Shelves at 64 in. must be 12 in. deep unless planned for the storage of only lightweight items, when 8-in.-deep shelves can be used.

Many conventionally designed kitchens with a sufficient number of cabinets are, on the basis of these findings, lacking in easy-to-reach storage.

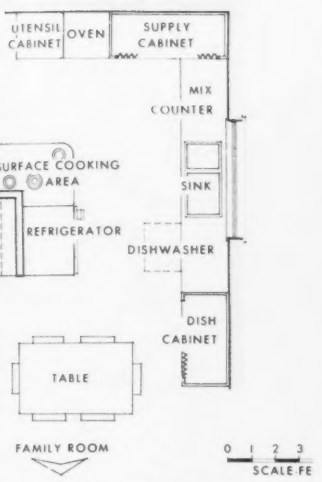
Studies on Space Requirements

During the past ten years, research on space requirements has provided a wealth of new data relating to kitchen design for specific household tasks. For example, Mize, Hood, and co-workers at the University of Georgia determined (5, 6) the space requirements for home baking centers; Tayloe and Howard, at the Agricultural Research Center near Beltsville, worked out (7) the space requirements for preserving of food; there also, Woolrich, White, and Richards studied the storage requirements for household linens, including kitchen linens (8). Johnson and Hurley (9), at the University of Arizona, and Gassett (10), at the University of Tennessee, obtained data for space needs for meal service.

Wood, Ribelin, and Lange, at the Washington State University, determined the counter requirements and location of the mechanical dishwasher (11). They concluded that there was only slight advantage in placing the dishwasher to the left of the sink—the traditional location. Because of these results, we felt confident in placing the dishwasher in one of our kitchen designs to the right of the sink.

Developing Kitchen Designs

Three energy-saving kitchens were developed on the basis of these energy-and-space studies. They differ primarily in the design of major storage areas. The first has a revolving cabinet about 7 ft. high for storage of staples; for dish storage, there is a closet-type cabinet with an accordion-fold door. The second has a staple supply cabinet with accordion-fold door and stationary shelves placed to the left and at



Floor plan of second energy-saving kitchen.

View of second kitchen. Revolving equipment shelves below counter and staple-supply cabinet (accordion-type doors open) are at right angles to the mix counter. Again, note recess for posture chair.

right angles to the mix counter. The dish cabinet is similar to that in the first design. The third kitchen has wall-hung supply cabinets with slanted fronts and shelves of varying depths. The dish cabinet has 12-in.-deep shelves that extend to counter level. Enameled aluminum, shade-type closures are used on these cabinets. Wall ovens and surface-cooking units were used in the first two designs and a conventional range in the third.

The three kitchens are similar in that they have: (a) provisions for the storage of all frequently used items within the heights recommended from the energy studies; (b) closures for the major storage areas which can be left open and out of the way when work is in progress; (c) space for comfortable sitting at the mix counter and the sink; (d) storage space for an adjustable posture stool; (e) special provisions for trash receptacle; (f) wheeled cart incorporated as part of the design; (g) dining space for six; (h) and dish storage near the table and the dishwasher.

USE TESTING

Three arrangements of each group of cabinets and equipment were subjected to use tests to determine how practical the specially designed units were, what modifications should be made, and how the three arrangements compared in the amount of walking required for meal preparation, service, and clean-up.

Each use test involved the preparation of nine meals—three breakfasts and six dinners—planned to include a variety of foods and types of preparation. For instance, one dinner menu consisted of foods from the freezer: fish, French fried potatoes, Lima beans, rolls, cookies, and lemon sherbet. Sliced tomatoes and beverage completed the meal. Another meal was a cold plate of salad and sliced ham with appropriate garnishes and accompaniments. For this meal, food was placed on the dinner plates in the kitchen. The use of various areas was quite different than for the meals served family style. The remaining dinner menus were planned for (a) short-time preparation, (b) long preparation for top of range cookery, (c) long preparation for oven cooking, and (d) leftovers. Breakfasts also required a variety of preparation. The main item for one was pancakes; for another, baked eggs; and for the third, cooked cereal and scrambled eggs.

To estimate the distance walked during the preparation and serving of the meals, the floor of the laboratory was marked into 1-ft. squares which were numbered. As one home economist prepared the test meals, another, using a tape recorder, noted the position of the right foot of the worker by square number and identified the activity. The distance walked was calculated from the positions recorded. Analysis has not been completed, but indications are that the difference in the travel distance in the three arrangements of the three groups of cabinets and equipment was not great except for one arrangement of the second group. In this arrangement, the surface-cooking units and oven were placed in a center island and the refrigerator was placed next to the supply cabinet. When analysis is complete, perhaps we will know whether the increase in walking was due to location of the oven or location of the refrigerator, or to both. The sum of the distance between appliances or the work triangle for each arrangement tested was, however, well within the maximum recommended by the Illinois Small Homes Council (12).

Two popular publications describing the first two designs are available (13, 14). A descriptive leaflet on the third design is in preparation. In cooperation with the Agricultural Engineering Research Division, two house plans incorporating Design 2 have been made available through the Coop-

erative Regional Plan Exchange. Presently, a house is being designed around the first design.

Summary

Basic data on energy expenditures and on space needed for specific tasks have been used in designing efficient, attractive kitchens. Various arrangements of these kitchens have been tested by determining distances walked during preparation of meals and cleaning up. The energy-saving features, while particularly important to the handicapped, appeal to normal homemakers as well. Methods of evaluating distances walked in the tests of meal preparation, service, and clean-up will, we hope, provide a basis for future research in kitchen planning for the home or institution.

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Heated Fats and Oils

Research scientists of the Food and Drug Administration have been studying the changes in food fats that may occur during cooking. In fats subjected to prolonged heating under extreme experimental conditions, we have observed the formation of altered fatty acids identified by their inability to combine with urea. The so-called urea-filtrate fraction which contains these altered fatty acids, when fed to animals will cause injurious effects. Other types of deleterious substances have been reported from other laboratories where the experimental conditions of heating were somewhat different. The production of these undesirable alterations of the fatty acids under experimental conditions indicates a need for further knowledge of their possible occurrence under industrial processing conditions where there may be abuse of the fats and oils used. At this time, however, we have no basis for believing that ordinary cooking processes cause alterations of fats to such a degree as to constitute a hazard.

When the Food and Drug Administration published its proposed "Generally Recognized as Safe Food Additives List" in December 1958, oleic and stearic acids were included. However, because of doubts in the minds of a number of investigators as to whether fatty acids commercially available for food use could be generally recognized as safe in the absence of specifications, they do not appear on the final list. Their present status under food additives regulations is that their continued use has been permitted, through time extensions, only when free of the so-called "chick edema factor." Our investigations are continuing into what may be responsible for the presence of a foreign material which accompanies the oleic acid, and possibly the stearic acid, which are now sold for food processing. When we discover what this substance is and devise a chemical test, then fatty acids can be used in foods under specifications utilizing such chemical tests. In the meantime, we have only the time-consuming chick assay to assure us of the absence of the chick edema disease factor.—*From a paper by George P. Larrick, Commissioner of Food and Drugs, before the Food Industries Advisory Committee of The Nutrition Foundation, Inc., at Skytop, Pennsylvania, May 4, 1961.*

Factors Affecting Energy Expended in Homemaking Tasks[1]

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HOME ECONOMISTS in the area of home management have considered energy to be one of the resources possessed by a human being. Many definitions have been given for management but we belong to the school of thought that believes that management in the home is the judicious use of all resources of the family to attain its goals for satisfactions in living.

According to Bratton (1), "The concept of human energy as a resource in management is the broader concept of energy and not the limited one of energy metabolism in the sense of caloric expenditure . . . Attitudes, interests, skills, and physiological condition of the circulatory and nervous systems are other factors not covered in the laboratory measurement of energy metabolism."

For nearly half a century, research in energy metabolism and expenditure has been of interest to industry, to the armed forces, to physicians, and to athletes. However, only limited consideration has been given to energy expenditure in homemaking activities. The few studies on record have been spread over a period of some forty years.

Why should we be concerned about energy expenditure in household tasks now more than in the past? Twenty-one years ago physiologists at Harvard University told us that there was no household task sufficiently strenuous to create fatigue—that such fatigue as might be expressed by women was purely psychologic due to boredom and monotony. Since that time, of course, household mechanization has greatly increased. Other increases may also be observed: (a) the number of homemakers employed full-time outside of the home who are also attempting to maintain their own housekeeping activities; (b) the number of women with physical limitations due to arthritis, cardiac and other disorders, or those who may have been victims of accidents. Physicians believe that rehabilitation of the handicapped can be most successfully accomplished when the woman is able to assume her role in homemaking—either partially or wholly.

The concept that so-called modern housing and mechanization have eliminated all drudgery is frequently questioned by homemakers and home economists. There can be no question but that electric lighting, mechanical refrigeration and ranges, vacuum cleaners, and such devices have greatly alleviated energy needs for performing the household tasks for which they are designed. Unfortunately, traditional methods of work in the home, passed along from mother to daughter, or by habits through trial and error methods, are too often not compatible with the most effective use of these modern devices. In too many instances, martyrdom (doing things the hard way) has achieved a feeling of sanctity.

As early as 1947, research in housing in the North Central Region, initiated through funds from the Research and Marketing Act, was directed toward a study of conservation of space due to increasing building costs. In 1955, McCullough reported (2) a study of space requirements relative to household activities. McCracken and Richardson, working at the Institute of Home Economics, conducted research on storage space in the home as related to human energy expenditure. Their results were reported in 1959 (3).

The objective of the project at the Ohio Agricultural Experiment Station was to determine the actual caloric expenditure when certain duties were performed by the homemaker and to study the

[1]Presented at the 43rd Annual Meeting of The American Dietetic Association in Cleveland, on October 19, 1960. Published with the permission of The Ohio Agricultural Experiment Station as paper number 88-60. Ohio Hatch 80-3, and NC-9, physiological responses of women at work in the home; relationship to methods of work and to design of work areas and labor-saving appliances, State Special 68, supported by The Central Ohio Heart Association.

FIG. 1. *Subject wearing a respirometer and making bed within a Plexiglas room. All photos courtesy Photography Department, The Ohio State University.*

relationships between the features of houses and house furnishings, such as pitch of stairs and height of bed, and energy expenditure.

Procedure

An indirect method of determining calories expended was used. The Benedict-Roth Metabolism Apparatus[2] was used to measure the basal metabolic rate of each subject. The Müller Respirometer[3] (Figure 1), which may be worn either on the chest or the back, was used to measure the energy expended during the various activities as it lends itself well to such use. The sample (0.6 per cent) of expired air collected with the Müller Respirometer was analyzed for oxygen with the Arnold O. Beckman Oxygen Analyzer Model E2.[4] This analyzer was calibrated on test days with a gas free of oxygen (water-saturated nitrogen) and also with a gas of known oxygen content (water-saturated compressed air)[5]. The barometric reading and the room temperature of the laboratory were recorded on experimental days.

Pilot studies were conducted prior to each phase of energy expenditure, i.e., before starting studies on bedmaking, stair-climbing, or load-carrying.

Following a basal and a standing measurement, a standardized breakfast was served. It consisted of 6 oz. orange juice, one soft cooked egg, 2 slices whole wheat toast, ½-oz. butter, and 1 cup coffee with cream if desired.

[2]Warren E. Collins, Inc., Boston.

[3]Zentral Werkstatt Göttingen, Göttingen Bunsenstrasse 10, Germany. The authors wish to extend their gratitude to Kenneth Harkness, Agricultural Engineering Department. The Ohio State University, for periodic calibration of the respirometer.

[4]Arnold O. Beckman, Inc., South Pasadena, California.

[5]The authors wish to express their gratitude to the Chemistry Department, The Ohio State University, for triplicate analyses of compressed air for oxygen content when requested.

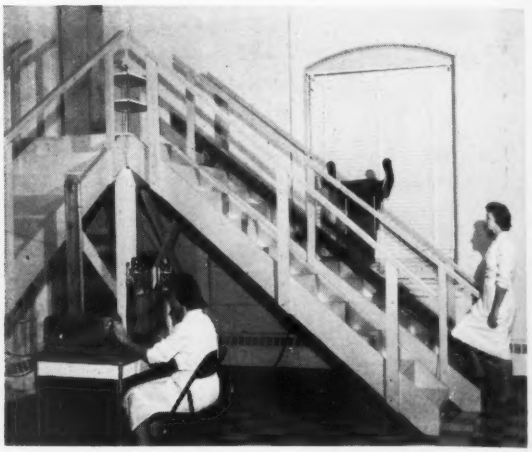

FIG. 2. *Stairs constructed to test energy expenditure. Stair on left represents the one suggested by architects. The one on the far right, with mechanical lift, represents stair leading from first to second floor. The third represents stair from first floor to basement. Beckman analyzer is in foreground.*

BED-MAKING

Bed-making, the first activity studied, was carried out by Singer (4). Four normal healthy subjects, three of whom were young staff members between the ages of twenty-three and thirty-two years and of average height and weight, were selected.

The caloric expenditure of individuals making beds of different heights and with different spaces around them was recorded. The bed heights, which were adjusted by means of wooden blocks, were 20, 23, 26, and 30 in., from the floor to the top of the mattress. The spaces studied were: (a) unconfined; (b) with a 16-in. pathway on each side of the bed and 24 in. at the end; and (c) with the bed pushed against the wall at the head and on one side and with 24 in. on the other side and at the end. Sliding Plexiglas[6] panels secured with angle irons and clips made it possible to adjust the room size as well as to take pictures (Figure 1). Two methods were followed in making the bed: (a) the habitual one of the subject; and (b) the one following instructions from the time-and-motion study developed by McCullough (2). Each method was repeated on four different days. For the statistical design of the study refer to Singer (4).

STAIR-CLIMBING

Stair-climbing was the second activity studied. Homes were surveyed by Pogue (5) to get information on the actual pitch of stairs. In addition,

[6]Rohm and Haas Co., Philadelphia.

FIG. 3. *Subject carrying basket of clothes while descending stair. Note arm position.*

the literature (6-8) was reviewed and three sets of steps (Figure 2) were built in the laboratory to represent the mean average of: (a) a basement stair (9-in. riser and 11-in. tread); (b) a stair from the first to the second floor (7-in. riser and 9-in. tread); and (c) one suggested by architects where neither space nor cost presented a problem (7-in. riser and 11-in. tread). Keiser gives further details of these stairs (9).

Ten normal healthy women, between the ages of twenty-five and thirty-five years, with a height range of 63.39 to 66.92 in. and a weight range of 115 to 150 lb., served as subjects. By means of a mechanical chair lift[7] used to transport a subject either up or down stairs, Keiser (9) was able to study the energy expenditure of young homemakers in ascending and descending stairways of the designs mentioned. She was primarily interested in determining a possible relationship between energy expenditure and posture. If such a relationship existed, a method could be developed that would be less time-consuming than the standard method now used.

The subjects went up and down stairs at the rate of 2.2 mi. per hour. Speed was timed by use of a metronome.

Pulse rate and pulse pressure were taken in all phases of the stair-climbing studies.

LOAD-CARRYING

The third study was concerned with load-carrying on stairs. Typical of loads most often carried on stairs, according to Pogue (5), were: (a) a basket of clothes (Figure 3), (b) a vacuum cleaner, and (c) a baby (doll[8]), each weighing 16 lb. This study was conducted in two parts: the first on ten young women, seven of whom had participated in the Keiser (9) study; and the second on older women between the ages of sixty-three and seventy-two years. The two speeds studied were a slow rate of 2.2 mi. per hour and a faster rate of 4.4 mi. an hour.

All measurements of these stair-climbing and load-carrying studies were made in duplicate and were of 5 min. duration. The subject rested between activities for the length of time needed for recovery. A stop watch was used for all time measurements.

Results and Discussion

Singer found (4) the height of the bed, at least in the range of the study, made a difference in energy expenditure which was statistically significant. The energy required decreased as the height of the bed increased. For each inch the bed was raised, the mean total calories were reduced by 0.151 calories per minute ($b = -.151$). The energy expended was not affected by either the method of bed-making or the spaces studied.

The stair-climbing study by Keiser showed (9) that the energy expenditure was greater for ascending than for descending the stairs, 0.987 and 0.831 calories per minute respectively, on the design of stairs suggested by architects. The pitch of the stair was not a factor in relation to energy expenditure.

The load-carrying studies as yet have not been statistically analyzed; the interpretation presented here is based on average values. The trend of the data on the younger group indicates:

(a) About half as much energy was needed to come down the stairs fast as was needed to go up fast.

(b) The energy requirement for going up the stairs at a slow rate is about twice the basal requirement and one-third more costly than coming down the stairs.

(c) Descending stairs slowly with loads required only a little more than half the energy needed to carry them up.

(d) To carry a basket of clothes on the stairs at a slow rate of speed used about the same number of calories as going up or down the stairs at the faster rate without a load.

(e) It took somewhat less energy to carry the sweeper or the baby than the basket of clothes.

As far as the data obtained with the older women were concerned, they followed much the same pattern in that less energy was required to descend than to ascend the stairs. However, there were some

[7]This equipment was provided through the courtesy of Chelsa Mfg. Co., Milwaukee, and installed by Houghton Elevator Co., Columbus.

[8]The authors wish to extend their gratitude to Dr. C. E. Hesthal, Professor of Physics, The Ohio State University, for metal weights for the doll.

differences between the two groups when carrying loads. Oddly enough, the older women used about 10 per cent less calories than the younger women to carry the clothes and the baby up the stairs. There appeared to be little difference in energy expenditure to carry the vacuum cleaner.

On the other hand, the older group required about 20 per cent more energy to carry the basket of clothes and the sweeper down the stairs and somewhat over 10 per cent more energy to carry the baby down. At present, we can not offer an explanation of these differences.

Summary and Recommendations

Energy measurements were taken on four women and each measurement repeated four times in a bed-making study which included four bed heights and two methods. This study indicated that only the height of the bed was a factor in energy expenditure, with the magnitude decreasing as the height of the bed increased. Therefore, it is apparent that if energy needs to be conserved, low beds are to be avoided.

Ten women were studied while going up and down stairs at 2.2 mi. per hour. Statistical analysis showed that the energy expenditure was greater ascending than in descending (0.987 and 0.831 calories per minute).

Twenty women, ages twenty-five to thirty-five and sixty-two to seventy-three years, were observed while carrying loads up and down stairs. The trend of the data indicates that the speed and possibly the position of the arms in carrying loads may be factors in energy expenditure.

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Recent FDA Seizures of Mislabeled Foods

Honey, vinegar, and sea kelp, valued at over $2100, were seized from a "health food" store in May by the Food and Drug Administration. The government alleged that the articles were misbranded by books and leaflets by Dr. D. C. Jarvis which were distributed with the products as labeling. Dr. Jarvis' books, *Arthritis and Folk Medicine* and *Folk Medicine*, recommend honey and vinegar in treating and preventing chronic fatigue, diseases of the lungs, kidney stones, and many other serious diseases.

In addition, four weight-reducing preparations were seized on charges that the products contained false and misleading labeling. One was a coffee-flavored reducing diet formula which contained gelatin-sucrose and saccharine (no coffee). The government charges that the product was misbranded by claims made in the labeling for efficacy in weight reduction, that the label failed to comply with the special dietary regulations, and that the picture and name suggested that the product contained coffee.

A sea water concentrate was also seized on charges that the label implied that the article contained nutritionally significant amounts of essential minerals, and that all of the elements contained in the product were necessary for health.

Pertinent Factors in Interpreting Metabolic Data[1]

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Some of the principles of concern in understanding the individuality of metabolism are illustrated in this paper. Simple but important analyses of the recorded literature are indicated so that readers of the papers can "see for themselves" the richness of data and possible meanings, perhaps not evident to the original authors. The idea is developed that individuality in metabolism (with all its complexities) is as important or more so, as the precise dietary level and its multiple influencing factors. The author emphasizes the need to accelerate thinking about old and new data and to formulate our own opinions for growth of knowledge and understanding of individuals in their physiologic differences and variations, in contrast to the mass or average or standard.

Knowledge grows like organisms, with data serving as food to be assimilated, rather than merely stored.
—PAUL WEISS

THE VAST fund of data on metabolic balance available in the literature is a challenge with an obligation for interpretation and assimilation into our thinking and knowledge. The attitudes of the "space age" as well as the era of "planned obsolescence" have tended to cast a shadow of doubt—even of unimportance—on most nutrition publications having a date more than five or, at least, ten years ago. On the other hand, some of the metabolic studies recorded as long as fifty years ago, and thereafter, could answer in part, with reconsideration and creative thought, some present-day questions and contribute to sensible working hypotheses.

Review and re-interpretation of the older reports brings to light new-appearing perspectives and valid ideas whose bases have not been noticed, or even read, recently. The actual "growth of knowledge" (1), as well as rethinking and coordination of our large pool of information, are invaluable if we are to understand the past, present, and future metabolic data and to interpret them for the betterment of the human being as each individual lives through the life cycle. It is important to bear in mind "that life processes of each individual involve *sequential* changes and that each phase is *consequential* to the succeeding. Actually, nutritive needs are dictated by the ebb and flow of processes, and failure to meet these needs limits the expression of potentialities" (2).

In the seeming urgency to find what fits the "normal," what is "standard," or what is "minimum," the evident and acknowledged importance of the individual, or uniqueness, has almost lost its proper biologic perspective. Indeed, the recorded opinions and beliefs of some writers acclaim the group over the individual. All too often the impression is given that human bodies are standardized and are therefore, predictable in detail of performance under defined conditions. Perhaps this is the influence of the age of automation with its exactness and conformity. Furthermore, much of the research has been interpreted in terms of the dietary level of a substance in relation to the group of subjects and the central tendency of the data in contrast to drawing attention to the important response of individuals to the diet and conditions. Dubos has wisely stated (3): "The multiplicity of determinants

[1]Presented at the 43rd Annual Meeting of The American Dietetic Association in Cleveland, on October 19, 1960.

which affect biological systems limits the power of the experimental method to predict their trends and behavior. Experimentation necessarily involves a choice in the factors brought to bear on the phenomena under study."

Many factors are linked together and cannot be separated, but interpretation must move to and fro with flexible thinking as does metabolism shift in itself. Deductions must be drawn with caution lest the perspective of the total situation be incomplete. It seems valuable, therefore, to work over some of the "old" and still fundamental recorded data, with some of the new in the light of present-day accumulated information for better "growth of knowledge."

The Challenge of Interpretation

This paper is intended to stimulate thinking concerning metabolic balance as a method of measuring the trends in the body and to point to some principles and means of interpretation which an informed curious reader might find of particular value and of challenging satisfaction in his growth of knowledge and understanding. Each of us can and should seek to analyze old and new results for ourselves by charting, reorganizing, and trying to fit the precious and large accumulation of data on metabolic balance studies of individuals into a meaningful pattern of nutrition in the life cycle for individuals.

It is hoped that the study of the data in old and new papers, some seemingly contradictory in conclusions and even disregarded, will draw some evaluators into the fun and productivity of *interpreting* data, rather than waiting for someone to publish new data and opinions to be memorized without assimilation or challenge. The putting together of many diverse sources and ages of metabolic data can give a much needed perspective to the tremendous pool of data available to all who will dust off some volumes and read for new meanings. Nutritionists, of all categories, need to go beyond current published opinions by delving into results and theories of the past for themselves and to develop insight into the progress in knowledge.

The author has chosen to emphasize a selected few principles which influence metabolic data from within the individual "normal" subject rather than to summarize the well reviewed dietary factors which influence metabolic data. These predominating trends of the individual have frustrated and sometimes confused some students who have sought to understand the diversity of findings. The reading of many text books and papers will give evidence to the paucity of attention given to the principles emphasized here. In this limited discussion, calcium, and to some extent nitrogen, have been the substances used as examples of principles, because the data are plentiful on range of age and physiologic condition of subjects classified as "healthy individuals." The concepts developed apply to various other nutrients, each with its own constellation of known and unknown factors influencing its metabolism. Points of emphasis are individuality, variability, duration of study, flow vs. state, nutritive background, and emotions.

Individuality

The uniqueness of each person has been explored most extensively over the years by those investigating phases of child development. Some of the representative research groups began studies in the late twenties, some have since been terminated and some continue. These pioneer groups were the Merrill-Palmer School, Western Reserve University, The Child Research Council of Denver, Harvard University, Fels Foundation, and the Children's Fund of Michigan. The longitudinal interdisciplinary studies, including preconception, pregnancy, lactation, infancy, childhood, maturity, and in some cases later maturity, reveal evidence of the sum total of various phases of metabolism to and through becoming adult. Such studies can and do reveal underlying principles of metabolism and something of what makes the differences between individuals. For some few in the health and medical field, there has been interest in individual cases, and there seems to be a growing interest in this knowledge. Incidentally, it might be advantageous for those who work mainly with adults to know more about "becoming adult"—for better understanding of their subjects.

The foundation of the concept of individuality is the obvious uniqueness brought about by heredity. This phase cannot be developed here, but the statement of Wagner and Mitchell (4) should be borne in mind: "It is our thesis that inheritance is characterizable in terms of transmission of control of relative rates of biochemical reactions within complex and interlocked metabolic patterns."

Individuality has lately been receiving less emphasis in nutrition research, interpretations, and applications than our literature throughout fifty years justifies. Clark (5) was the first to plan and execute a longitudinal (twenty-eight weeks) metabolic study involving minerals and nitrogen. The individual response of five men to a controlled diet was determined. He chose the subjects for "considerable contrast, in age, temperament and nutritional condition." These differences among individuals necessitate extensive and separate considerations of factors better known today. Clark's research, however, had a pioneering objective and surprising results. The pity is that many engaged in metabolic research today have not blown the dust off the volume, let alone read this stimulating and challenging work.

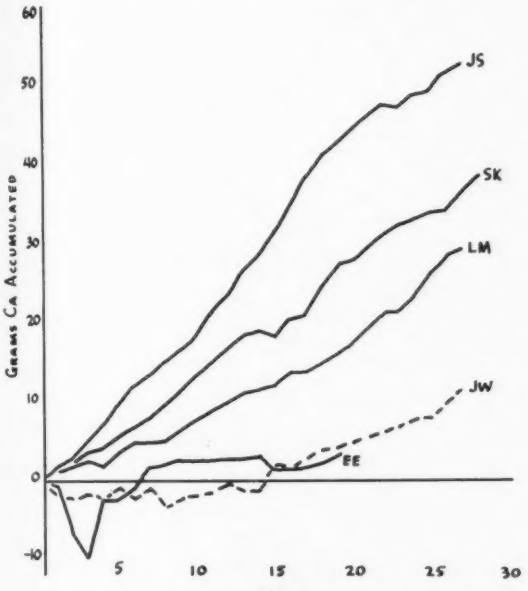

FIG. 1. *Consecutive weekly calcium balances of five men studied by Clark (5) in 1926, were calculated cumulatively and plotted for the twenty-eight-week period. On a mean intake of 900 mg. daily, the individual trends of accumulation are marked.*

Longitudinal studies begun in 1923 on human subjects during pregnancy and lactation in the Research Laboratories of the Merrill-Palmer School included individual metabolic balances and chemistry of breast milk. In 1931, this work was extended to growing children. The uniqueness of the results for each subject was demonstrated (6-12). In other studies, not designed for the purpose of revealing individuality, are found innumerable contributions to this subject if one seeks them. Frequent references to individuality were made by Nicolaysen, Eeg-Larsen, and Malm (13) in their comprehensive review, "Physiology of Calcium Metabolism."

Williams, in his magnificent book *Biochemical Individuality* (14), has brought together and interpreted many of the basic principles and data which are essential for understanding individual metabolism and nutritive needs. He says pertinently: "Comparatively little research time and effort has been devoted to definitive studies in physiology and biochemistry as to precisely how so called normal individuals differ from each other. Such study necessarily involves repeated observations on the same individuals, in contrast to the series of single observations on representative populations."

Williams reviews and points up (14) the multitudinous sources of individuality which have come from heredity, the functioning of glands, enzymes and their influence on the individual patterns of metabolism. Differences in organ size, structure, and function are reviewed, along with the effects of

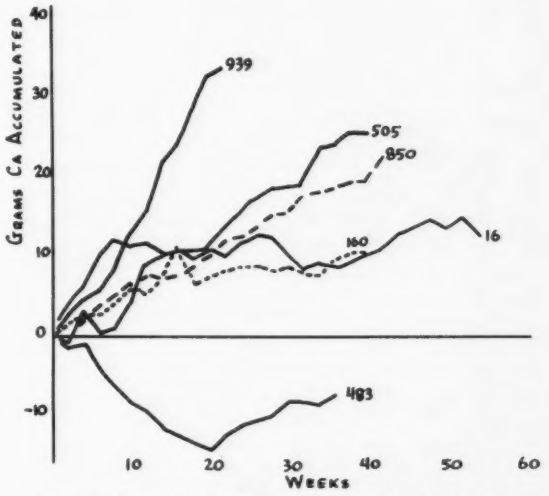

FIG. 2. *Successive calcium balances of six of the men studied by Malm (15) were calculated cumulatively and plotted for each consecutive period, twenty-two to fifty-four weeks continuously. Individual rates of gain or loss, with variations in trends, are obvious. Intake was approximately 900 mg. daily.*

environmental insults during the entire growth period on the metabolic efficiency and needs in subsequent periods of life. He challenges us in saying, "Nutrition in the future decades will, if the genetotrophic principle is solved and is important as our data indicate, turn its attention more and more to understanding and supplying individual needs —needs that quantitatively do not apply to all humanity but are more or less distinctive and crucial for individuals."

Since only repeated measurments on individuals under controlled situations and over a period of time will reveal individuality of trends, some selections of evidence in the literature have been made to illustrate the principle. In some evaluations, the average daily balances have been calculated for the periods studied and accumulated for the duration of observation to emphasize the "goingness" of an individual's metabolic trend. Clark calculated (5) the total accumulation but did not show the importance of the progressive trend and change to the end of the observations. Although many factors of control, such as hormone, enzymes, and size, as well as functioning rates of organs, cannot be measured, certain metabolic data are available which indicate differences among subjects.

Clark's men were individual in cumulative response to the same living and dietary intake, as shown in Figure 1. Six of the forty-four men in Malm's extensive classic, and unique long-term study (15) illustrate for this group the individual response to similar circumstances in Figure 2. Of the eleven men whose metabolism was charted and shown in these two charts, all but one stored cal-

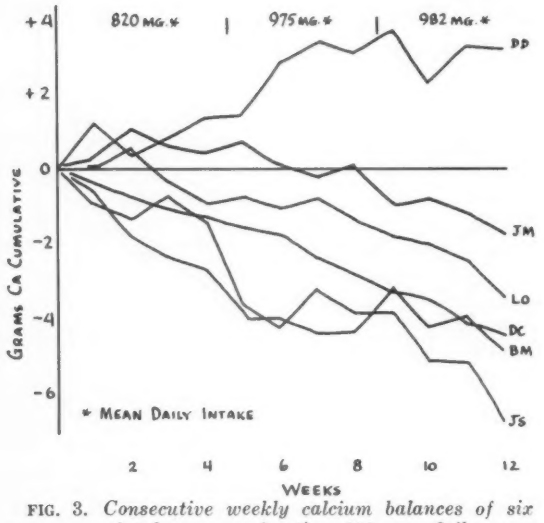

FIG. 3. *Consecutive weekly calcium balances of six women on intakes approximating 900 mg. daily were accumulated and plotted (16). Individuality in metabolic trend with variability is obvious. Factors causing continuous loss are challenging.*

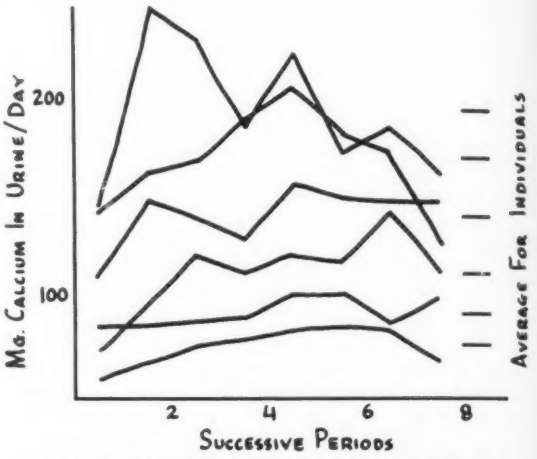

FIG. 4. *Individuality and variability in daily calcium content of urine are shown for seven successive weeks, as well as the average, for each of six adolescent girls (22).*

cium and to different degrees. Each individual curve raises many questions which can be answered only in part. Whatever hypotheses come forth, however, each is important in understanding individuality in data. A contrasting set of results is shown in Figure 3 for six women consuming approximately the same (900 mg.) level of calcium studied by Johnston, McMillan, and Falconer (16). Only repeated studies could have brought to light these challenging results which have been generally disregarded by those using short-time methods and reporting on the per-day-per-period basis only. Data are available in the literature on individual metabolic trends during pregnancy (17) childhood (18-21), adolescence (22-25), adult men (5, 15, 26, 27), and women (16, 28).

Some measurable and published data on metabolic differences can be profitably studied, such as urine and fecal levels, as well as degree of utilization. In addition, data are available on the gastrointestinal tract, its size, and rate of motility.

Individuality and factors affecting calcium in the urine have been carefully studied by Knapp (29). She found these include the skeletal size, level of calcium intake, "endogenous factors" assumed to be endocrine, as well as acid-base regulation of the body. On the other hand, the individual levels are seldom a point of interest and appreciation, although they may vary tenfold on a given level of intake. Figure 4 illustrates the individuality among six adolescent subjects studied by Johnston, Schlaphoff, and McMillan (22). These findings are typical of the individuality present in many longitudinal studies in the literature. It is evident that the higher the individual level in the urine, the greater will be the intake needed to cover the loss unless otherwise compensated (13, 15, 30).

Individuality in secretion of digestive juices in quantity and chemical content are important considerations which are difficult to measure in each subject but important in individual metabolic cost. Malm recently reviewed (15) the literature and indicated that the range may be from 400 to 1100 mg. per day. He said, "The variability may be pronounced, both within and between individuals." This was recently confirmed by Gran (31). The calcium secreted into the gastrointestinal tract, together with that from food, is the total source of the body's calcium for replacement, growth, and remineralization (13, 15, 30-32).

Individual degrees of utilization have been recorded and interpreted by several workers (15, 25, 30, 31). Some calculations will illustrate the principle of application: If we use the range of 15 and 30 per cent utilization and apply it to the digestive juice calcium absorption, some interesting possibilities of individual needs result. With 400 mg. calcium secreted, the range of loss may be from 340 to 280 mg., whereas at the 1100 mg. level, it would be 935 to 770 mg. per day respectively for 15 and 30 per cent utilization. These losses must be covered or overtaken to protect the content of calcium in the skeleton.

Combining the individual possibilities of urine (25 to 400 mg.) and digestive juice (400 to 1100 mg.) and degree of utilization (15 to 30 per cent), there is a range to cover of possible losses from 465 to 1335 mg. per day among the hypothetical individuals. To this date, there is no way in which to predict which individual has which metabolic pattern and when it might be changed by internal or environmental factors unidentifiable by the subject

or the observer. The important interdependent mechanism in the intestine-bone-kidney system has been emphasized recently by the Neumanns (34).

Some evidence from roentgenologic studies of the gastrointestinal tract brings in the possibility that differences in motility rate and size (35), as well as laxation time in the intestinal tracts or digestive processes, may be important in the degree that nutrients are available for absorption.

The evidence selected here and other data in the literature of the past fifty years strongly indicate that more cognizance must be taken of individuality in understanding metabolic balance data.

Variability

Variation of metabolic response within individuals on longitudinal studies has not received the attention it deserves. Again, to observe variability of the individual under standardized conditions, each subject must be studied repeatedly. Although Clark recorded (5) variable retentions for each of his five subjects for eight elements studied in twenty-eight consecutive weeks of balance studies, he did not emphasize this aspect. Beginning in 1930, successive metabolic studies on pregnant women and children by Macy and Hunscher with co-workers (6, 11, 19) and Porter-Levin (20) urgently called attention to the inconsistency of the response of subjects to controlled diet and living circumstances.

The Merrill-Palmer School investigators remarked in 1931 (6): "The selective action of the body in the digestion, absorption, utilization, and excretion of the ingested foods has not as yet been completely elucidated. Extreme variations in the balances of consecutive periods must of necessity require a marked compensatory action of the body to supply sources of supplement for losses and means of storage for excesses."

Similarly, Porter-Levin, in 1933, studied three children by consecutive balance technique for sixty days in three-day periods and stated (20): "Perhaps the most pertinent observation on the retentions is their variability in a given subject under controlled conditions. While these variations may be emphasized by a low mean level of retention, they appear to be much greater than would be expected from the controlled experimental regimen.

"If wide variations in mineral retentions occur normally in young children on constant diets, this fact is important when considered in the light of its influence on the correct interpretation of mineral storage data. It can be imagined that the selection of random balances as measures of a fixed level of mineral storage in the body, may give false values and incorrect interpretations to the effects of the test factor under observation. In reality such chance balances may measure high or low point within the expected range. Particularly might this be true when there is not due consideration of changes of the quantities of calcium and phosphorus ingested, or of the starved or saturated condition of body at the time of test, and when there is not adequate control of the numerous qualitative factors affecting mineral mobilization in the body."

The Macy and Hunscher group said, in reaction to several years of observation, in 1936 (19): "We have grown more and more impressed with the wide physiological variations found. These fluctuations are evident not only among individuals of the same age, body size and living under the same environmental conditions, but of the same individual when kept under constant conditions and observed continuously over, not only days, but weeks. Obviously, it becomes necessary to build up some knowledge as to how much variation one may expect to find in a healthy individual living under highly standardized conditions before it is possible to interpret the degree of differences of results found under specific experimental conditions or disease . . . Without the inclusion of such control data one may be easily misled into false fields of interpretation by the use of this method (metabolic balance) for determining the subsequent effect of certain foods or other factors on metabolism." The chart in the published paper illustrated the variability as well as the individuality of metabolism in the children on a standardized regimen. Many other papers in which consecutive balances have been determined show such variability does exist. The cumulative interpretation in Figures 1 to 3 reflects the variability in successive balance periods.

Duration of Studies

Duration of successive metabolic studies becomes pertinent not only in revealing individuality and variation from period to period on a daily basis to find the representative range under controlled circumstances, but also in observing shifts and adjustments as time progresses. The cinema perspective may reveal the goingness of living, most controlled under experimental conditions but in contrast with the inconstancies of ordinary living. The common practice of discarding data while the subjects "adjust" is unfortunate and wasteful of valuable information. Since data are applied to the goingness of living and composition of the body at any age or stage, consecutive studies make possible the cumulative interpretation which reveal trends of change and of gains or losses from the body of the constituents. Rate (daily balance data) multiplied by time is of great importance to understanding the on-going effect of processes.

There are times when positive balances and, therefore, accumulation of body constituents are expected, namely in pregnancy, childhood, and in adults rated as "healthy" but in the process of re-

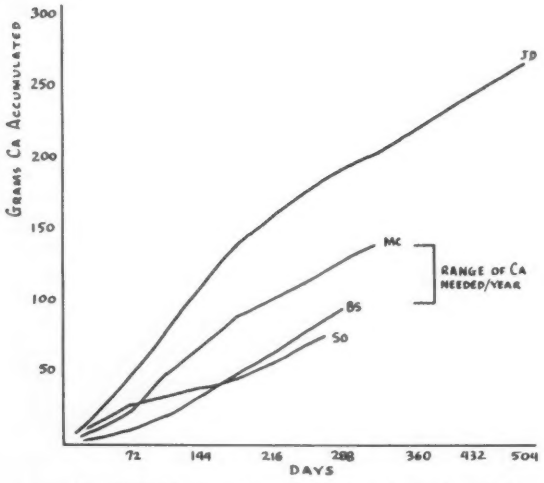

FIG. 5. *Individual amounts and rates of calcium accumulated by four adolescent grls studied by Johnston (24) are shown in relation to estimated range of need per year, as calculated by Leitch and Aitken (32). One girl failed to store calcium and one exceeded the estimated need for growth.*

habilitating diminished tissues. The needs for calcium from birth to adulthood have recently been re-evaluated by Leitch and Aitken (32) as a total of 1200 gm. accumulated in twenty years. The retentions needed per year and per day for boys and girls have been recalculated. These figures are for an "average" boy and girl, growing at an "average" rate; therefore, they must be interpreted with a wide margin for various body types and physical growth rates for individual children with wide divergency of maturity stages. Some comparisons of individuals and of groups of children are shown in charts to indicate the importance of duration in observation of direction and change. Figure 5 illustrates accumulation of four of Johnston's adolescents (24) for calcium and the calculated need for accretion per year (32). The value of successive balance studies was clearly shown in a study on eight children for calcium by Macy *et al.* (36).

How long a duration is necesary to reveal what an individual may do under controlled conditions? The astonishing record of the continuous accumulation of calcium by most of Clark's (5) and Malm's (12) men is also recorded by Johnston and McMillan (37) for nitrogen in women in Figure 6. It was similarly revealed by cumulative interpretation of data of Meyer *et al.* (38) in some individual subjects. It is evident that consideration should be given to the cumulative or goingness of the data which, on the daily average basis, is "slightly positive" or "slightly negative." Furthermore, account should be made of "adult" growth and losses of hair, skin, nails, and sweat discussed later.

The value of long watchfulness in revealing

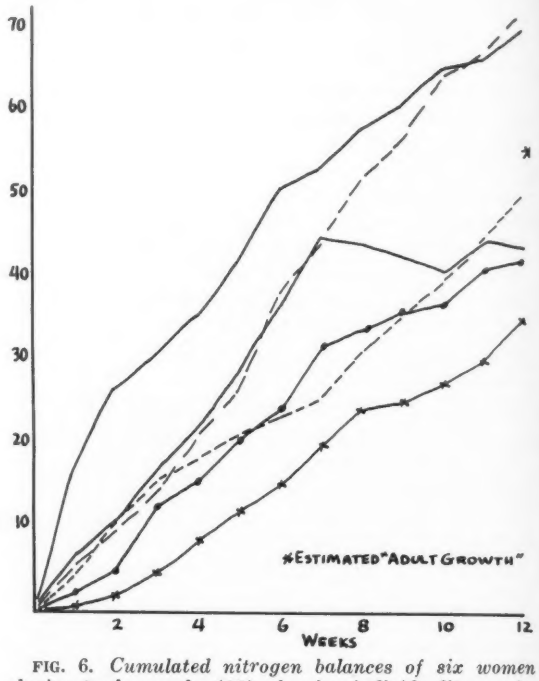

FIG. 6. *Cumulated nitrogen balances of six women during twelve weeks (37), showing individuality, variations, and changes in trends. The estimated losses or "adult growth" need, suggested by Mitchell (49), is indicated, pointing to the advisability of consideration of losses from hair, skin, and nails in short-, and especially in long-term metabolic trends and evaluations.*

changes of metabolic trend is shown in several examples. Two men, J.W. of Clark's group and Number 92 of Malm's group, maintained a practical plateau of accumulated calcium for fourteen and thirty-six weeks, respectively, on approximately 900 mg. calcium; they then subsequently continuously stored the element rapidly for fourteen weeks (Figure 7). Resistance to good utilization of calcium by children was observed by Ohlson and Stearns, who said (25): "Six months on a good diet were required before the children known to have had a borderline diet were able to equal the retentions of previously well fed children, but the children coming from the poorer environment were able to take advantage of increasing intakes of both calcium and vitamin D."

The reduction in the secretion of some hormones by underfeeding has been recognized and may be involved in some of the cases of resistance to utilization of an adequate diet. The importance of the individual's levels of hormone functioning, as affected by heredity and environment, looms large in the future in revealing the possible reasons for some divergences of metabolic trends both inter- and intra-individual.

Half of Malm's (15) thirty-nine adult subjects fed 900 to 1000 mg. calcium for periods of seventy to

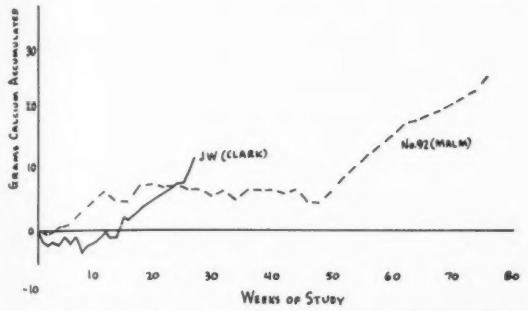

FIG. 7. *Changing rates of calcium accumulation in one of Clark's (5) and one of Malm's (15) men, each consuming approximately 900 mg. daily. Subject J.W. was in equilibrium for fourteen weeks, then began storing calcium. Subject 92 maintained equilibrium on a plateau for thirty-six weeks, then suddenly stored calcium continuously.*

532 consecutive days accumulated 20 gm. or more, and some continued accretion as long as nine months. When they would have stopped storing and gone into a "saturated equilibrium" was not answered in these data.

Nutritive History

Nutritive background of subjects and the resultant metabolic reaction is an important consideration in understanding balance data and in the management of subjects for rebuilding, remineralization, and growth. As indicated above, some individuals may react immediately by storing at a high rate when the diet is made adequate, whereas others may show a resistant or reorganizational period for as long as six months.

Clark's findings led him to state in 1926 (5): "Under normal dietary conditions one would not expect adults to retain the basic elements over such a long interval (28 weeks). It is therefore apparent that these men had been obliged, because of various dietary deficiencies, to draw heavily on their mineral reserves." It is interesting to recall that there was general disbelief at the time that adults could retain calcium and other substances for rebuilding depleted tissues.

There are several splendid examples of the ability to store elements beyond the needs for growth and maintenance. One such case study is found in the famous 1922 publication by Sherman and Hawley (39), although, in the light of knowledge of that time regarding nutritive background, the authors did not mention this important interpretation. One child was kept in the laboratory for a year and two months under excellent dietary control. When she was eleven years and seven months old, she stored calcium at an average rate of 541 mg. a day; the range was 448 to 526 mg. in three successive three-day periods at the 900-mg. level. When she was twelve years old, on an intake from 981 to 1803 mg., her ten three-day balances averaged 703 mg. (range 449 to 885 mg.) and on an intake of 744 mg., she stored an average of 429 mg. (range 399 to 457 mg.). On the other hand, nine months later on similar intakes, her balances were only 152 mg. (range, −20 to +335 mg.) on the high and only 137 mg. (range, 34 to 282 mg.) on the low intakes. Both the averages and the ranges seem to indicate distinct reflection of her nutritive state.

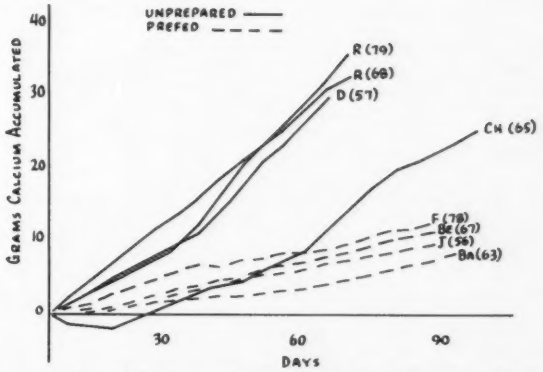

FIG. 8. *Differences in individual rates of calcium storage are plotted cumulatively for four unprepared and four prefed children of matched ages studied by Macy (12). The prefed children stored at a slower rate, perhaps indicating growth needs alone, in contrast to the unprepared subjects who may have been making up for previous inadequacies in addition to growing.*

Some other observations on nutritive background are found for calcium in rats by Fairbanks and Mitchell (40), in a pregnant woman by Hummel *et al.* (17), in children by Macy *et al.* (12, 19), in adult men by Clark (5) and Malm (15), and in cases of osteoporosis by Whedon (41). Papers revealing the effect of low nutritive status resulting in greater than expected retentions of nitrogen are recorded for a woman by Swanson (42), for adult native African men (43), and for children by Macy (12). Effects of prefeeding to fill reserves are shown for Macy's children in Figure 8 for calcium. Data on nitrogen storage were similar.

Deficits and Rehabilitation

Deficit development and recovery have been demonstrated in the literature and need attention by study and application. With the theoretical extension of a "slight loss of 100 mg. a day" in twenty years, the individual adult could lose more than 50 per cent of his assumed content of 1200 gm. calcium, or actually 730 gm. This state of body deprivation might be identified by x-ray. If therapeutic measures of adequate intake of calcium with all favorable, dietary and living circumstances were instituted, and with continuous positive balance rates of 300 mg. a day, it would take six and a half years to rebuild the body content; or, at the rate of 200 mg. a day, it would take ten years.

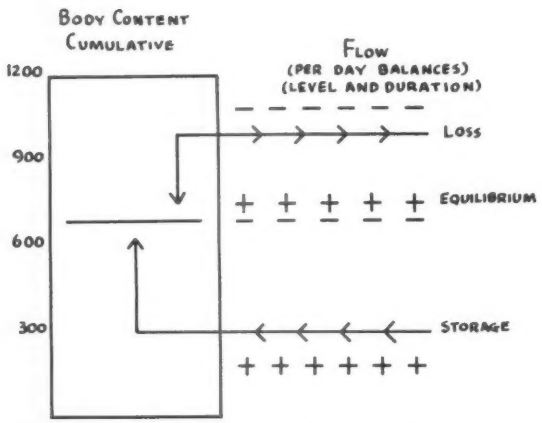

FIG. 9. *Diagram illustrating the effect of continuous balance (+, −, and ±) on the body content of calcium (representative). Continuous losses lower body content, whereas continuous storage increases body content. Equilibrium maintains the body level of a substance in saturation or in debt.*

Furthermore, if a set of circumstances of intake or lack of utilization came into play, the individuals might be in repeated negative balance at the rate of 200 mg., resulting in a more swiftly created deficit in only ten years. In some adverse circumstances, the loss could even be accelerated. Duration and rate of losses are pertinent to the total effect on body content. This problem should bring to mind the results reported on continuous balance studies in adults, both men and women.

Balances and Body Content

Flow of balances vs. body content of constituents involves concepts and customary terminology which need clarification and better understanding. Statements that subjects "come into equilibrium" and "maintain equilibrium" are made on the basis of long or short metabolic balances and tend to convey the idea that the body is sufficiently high in content for efficient functioning and therefore is saturated or there is no further need for storage. Whether the balances (flow) are for nitrogen, calcium, or other constituents, the daily retentions may show approximate equilibrium in subjects whose bodies are actually in debt or below the wise and safe levels for any age or stage. With maintenance of equilibrium as the metabolic aim, the bodies may remain in debt with respect to "normal" content.

A diagram (Figure 9) of body content levels in relation to different directions of flow from consecutive balances is presented to develop understanding of words and concepts. Positive balances (in flow) over a long period will build up body content in calcium (for example) during growth from 20 gm. at birth to an approximate 1200 gm. at twenty years of age. Illnesses, malfunctioning of hormones, insufficient diet, low rate of absorption, and other factors may decrease the rate and the extent of acquiring (child) and maintaining (adult) each individual's potential.

Since the universal aim seems to be to provide food and environment for each child to reach his potential in size and function (satisfactory body content), should we be complacent in accepting a lesser concentration in the adult body by being satisfied with equilibrium of flow resulting in unsaturation of tissues? This question deserves more complete study. It is granted that in some cases, less-than-optimal is at present difficult to identify until at least 30 per cent of the estimated content is lost. Because we do not have the techniques to identify all effects of unsaturation as unphysiologic for a period of time, or more so, in the lifetime, should we be satisfied with maintenance of equilibrium in the flow to the complex and still poorly understood adult human body? Since diet alone does not control the flow and since individuality of the metabolic reactions to given situations strongly influence flow, should we gamble with the unknown years of the future by basing our assumptions on short-time studies? There are recorded opinions pro and con.

The papers reviewed under nutritive background, or history, illustrate that the body in need, when given the opportunity to enrich itself, will do so by positive balances (in flow). Children have stored larger amounts than needed for growth (12, 39) and adults (5, 15) will store as fast as growing children and pregnant women! There are no reports on excess accumulation of nitrogen and the minerals in "normal individuals" who are nourished by our general food supply.

In addition to the evidence and reactions of some of our interpreters that it may be wise and safe to place high value on saturation of the body stores of calcium as the preferred physiologic situation, we now have indications from the atomic age to confirm this opinion (31). Furthermore, the July 1960 issue of *Nutrition Reviews* (44) stated: "Although the level of strontium-90 in milk has been gradually increasing, the high calcium content of milk makes it one of the best protective foods for the prevention of strontium-90 accumulation in humans." An evaluation of both the strontium-90 and the calcium levels of food, together with their metabolic tendencies, shows that the higher calcium level is preferred to the lower in order to reduce the deposition of strontium-90. This evaluation confirms the opinion of Hathaway and Leverton in the *Food*, The Yearbook of Agriculture for 1959, who, after reviewing the studies on animals, state (45): "If people react in the same way, it will be important to have high intakes and body reserves of calcium as a built-in protection against radio-

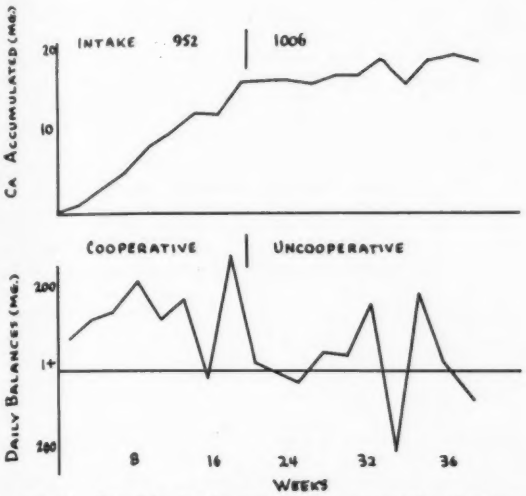

FIG. 10. *Possible detrimental effect of emotional stress on calcium storage on Malm's (15) Subject 19. He stored 16.5 gm. calcium in twenty consecutive weeks when rated as "cooperative," but followed with a plateau (small positive and negative daily balances) when he was "uncooperative." The value of cumulative interpretation vs. average daily balances is evident.*

activity." Indeed, Gran states (31): "The best protective measures against an excessive accumulation of Sr-90 in the human skeleton appears to be a liberal Ca supply in the diet."

Emotional Factors

Emotional tension or stress is known to influence metabolic balance data. This is uncontrollable and certainly not always observable in quality or quantity. It may be the cause of several seemingly "unexplainable" deviations over long or short periods. In 1930, Macy and co-workers (46) called attention to a large negative balance in a woman undergoing anxiety and grief during the twenty-sixth week of pregnancy. Substantiating evidence was found at that time in studies on calcium and phosphorus metabolism in the cow (47, 48). Clark had described (5) his human subjects as the "phlegmatic," "nervous," and "very nervous" types. The latter, J. W., utilized calcium least well and seemed to improve only after fourteen weeks on the study, while the others had made better use of the diet throughout. Stearns and Ohlson had indicated that emotional disturbances decreased absorption (23, 25) and have given convincing evidence. Other workers, whose findings and interpretations are reviewed by Malm (15), show need for this consideration among subjects maintained under well planned and controlled experimental situations.

Two of Malm's subjects were selected as showing "suggestive evidence for the concept that psychic stress and emotional tension will affect calcium metabolism unfavorably." The data on subject

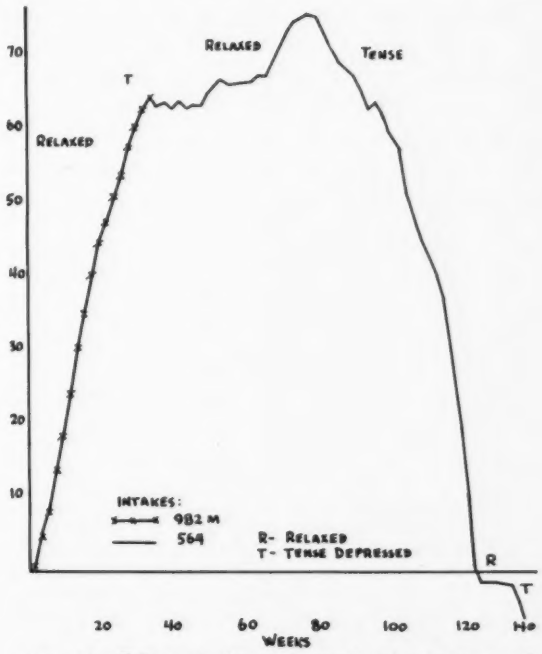

FIG. 11. *Effect of observed emotional stress on calcium metabolism in Malm's (15) Subject 12 is indicated in the accumulated positive and negative balances. He stored calcium on intakes of 982 or 564 mg. during periods of relaxation. When he was tense, he lost the formerly stored calcium at a fast rate. In 122 consecutive weeks he gained and lost 78 gm. body calcium.*

Number 19 are given on both cumulative and average daily bases (Figure 10) and indicate the relationship in both the "cooperative" and "uncooperative" periods. Subject 12 (Figure 11) accumulated 65 gm. calcium for thirty-four weeks when he was relaxed; later in a forty-six week period, he lost 77.5 gm. when he was tense.

Unaccountable losses from the body, such as perspiration, hair, skin, and nails, should also be considered in interpreting longitudinal data, particularly on nitrogen. Mitchell's 1949 re-evaluation (49) of consecutive balances on twenty-three university students in 1907 gives some data which should be applied in cumulative calculations. He found that approximately 1 gm. nitrogen and 174 mg. phosphorus daily or 560 mg. and 10 mg., respectively, per square meter may be considered retained for "adult growth" relating to construction and loss of hair, skin, and nails. See Figure 6 for application. Such considerations need to be applied in calculations of growth or in "maintenance of equilibrium." Malm has reviewed (15) the information concerning calcium and indicated need for further research.

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Milk Shakes in the School Lunch Program

The school lunch program and the USDA's Special School Milk Program are adding importantly to the consumption of milk by youngsters. There are still, however, many children who do not receive the recommended 1 pt. to 1 qt. milk daily.

In an effort to supply a palatable source of additional whole milk to pupils, a milk shake machine was installed in one of the school lunchrooms of Greenburgh District No. 8, Westchester County, New York. The results have been such that another machine is being installed in the lunchroom of a new 1500-student junior-senior high school now under construction.

Nutritionally, a milk shake is higher in calcium than ice cream and lower in butterfat and sugar. The milk shakes offered in this school system are made with two-thirds whole milk and one-third concentrated liquid chocolate ice cream mix, which also contains milk.

The benefits of having the milk shake machine in the school lunchroom are summarized in this way by Georgia Beilharz, School Lunch Supervisor:

(a) Many of the children who buy the lunch, which includes a ½-pt. milk, buy a milk shake, too. Some mix their plain milk into the milk shake because they enjoy it more this way.

(b) Students who bring sandwiches from home and who otherwise drink no milk at noon buy milk shakes.

(c) Sales of milk shakes are also made at school games and can be made after school. Both the principal and assistant principal have requested that the machine be kept in operation even when the lunchroom is closed. Many faculty members buy shakes for themselves each day.

(d) The installation not only pays for itself out of earnings, but provides a source of cash for the lunch program. Within the first five months after installation, it bought a sorely needed new refrigerator for another school in the district. Shakes are sold in 10- and 20-oz. waxed paper cups. The smaller size sells for 10 cents, the larger, for 20 cents. The cost of the larger shake is 12.4 cents, including ingredients, the paper cup, and straw.

(e) No extra labor or dishwashing is involved. The milk shakes are dispensed by a student helper, who receives free lunches in exchange for his services. In other schools, it would be feasible to turn the machine toward the students' line and allow them to serve themselves. The paper cups are sanitary, easy to handle and dispense, and provide a real saving in storage space and glass inventory. They add no extra burden to our dishwashing facilities. The only labor involved is in filling the machine with three dairy-packed cans of milk and concentrated mix (done by the boys in the school); drawing each portion, which takes 3 to 5 seconds, depending on the size; and cleaning the machine once a day.

"Two-thirds of our youngsters buy their lunch for 30 cents," Miss Beilharz reports. "During the first 10 min. of each lunch period, we serve only the complete lunch. After that, children who want milk shakes or other 'extras' may come to the counter. Sales of milk shakes are thus additional sales and have not substituted for those of regular milk."

Calcium and Phosphorus Retention on Low-Calcium Diets[1]

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IF IT IS true that individuals can adapt to habitually low levels of calcium intake, provided the habitual level is not below a minimum requirement, the question of where the minimum requirement lies needs to be answered. Although the present study is not concerned directly with the minimum, it is aimed in that direction and was undertaken to answer two questions: First, do the few college students who customarily have low-calcium intakes obtain enough to cover their needs? Second, what is the effect of a long-term, low-calcium intake on phosphorus retention?

Procedure

Subjects were selected from student applicants who fulfilled the following qualifications: their diets during the past three years or more, as judged by interview, were low in calcium; the current calcium intake, as judged by calculation of a weekly dietary record, was low; the calcium content of a 24-hr. sample of urine was less than 170 mg.; their score on the Bell Adjustment Inventory was satisfactory; and they were in good health as judged by a physical examination. Only seven students met all the requirements and were willing to serve as subjects.

The seven subjects, four men and three women, ranged in age from eighteen to twenty-six years (Table 1). The heights of the men ranged from 175.3 to 185.6 cm. and of the women from 155.1 to 176.0 cm. The weights of the men ranged from 72.8 to 89.5 kg. and of the women, from 51.4 to 85.6 kg. Two subjects, one man (Subject R) and one woman (Subject C), were 44 and 41 lb. respectively above the average weights published in 1959 by the Society of Actuaries (1). The men were of medium body build, according to White's (2) classification based on height, weight, and bi-ilio cristal diameter. No standards could be found for classifying the body build of women.

The seven subjects were placed on a balance study of five four-day periods during which each consumed a carefully weighed diet containing approximately the same amount of calcium and phosphorus as the diet to which he was accustomed. Balances of both calcium and phosphorus were determined because previous work (3) in this laboratory suggested that a low intake of calcium limits phosphorus retention.

TABLE 1 **Age, height and weight of subjects**

SUBJECT	AGE*		HEIGHT†	WEIGHT‡	
				Beginning	End
			Women		
	yr.	*mo.*	*cm.*	*kg.*	*kg.*
C	20	7	176.0	85.6	83.7
D	26	10	165.1	62.6	61.2
J	19	10	155.1	51.4	50.2
			Men		
B	22	0	185.6	88.7	88.6
L	18	0	180.7	72.8	72.8
R	21	1	175.3	89.5	89.6
P	20	6	184.2	83.7	83.6

*At beginning of study.
†Without shoes.
‡Before breakfast without shoes and jackets.

With the exception of calcium and phosphorus, the controlled diet of the metabolic period was planned to meet the Recommended Dietary Allowances (4). Every four days the diet was supplemented with 5 mg. riboflavin and 1000 I.U. vitamin D. On each of three days just preceding the metabolic period, the subjects were requested to take one capsule containing 1445 I.U. vitamin D.

The basal diet was similar to one used in a previous study (5) except that enough dry milk was incorporated to raise the calcium content to 335 mg. per day. During the entire study, the weight of

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basal foods in the breakfast was kept constant for all subjects but the weights of the basal foods in the lunch and dinner were varied. During the first four-day period, the men were given the entire basal diet; the women received 0.8 of the basal foods in the lunch and dinner. In the second period, adjustments were made to fit energy needs. All the women and one man, Subject R, were given 0.7 of the lunch and dinner. In the third period, because of loss of weight, one woman (Subject C) was served the entire basal diet. The subjects were allowed a few low-calcium foods without limit to adjust intakes to energy needs and were allowed raw apples without limit to adjust laxation. Each person was given a supplement of milk or Cheddar cheese to raise his intake of calcium to that of his customary one.

To find the customary intakes of calcium and phosphorus, calculations were made from the records kept by each subject for a week. Each was interviewed concerning his intake of high-calcium food from infancy to the present time to ascertain whether his dietary record was typical of at least the last three years and to estimate how long a low-calcium intake had been consumed. This is not an accurate way to estimate past intakes because people do not remember what they have eaten; nevertheless, it was the only source of information.

Care was taken to avoid uncalculated sources of calcium. The subjects drank distilled water. No rubber was allowed to come in contact with the food, urine, or feces because most rubber contains calcium carbonate.

Four-day composites of the food in the basal diet were heated with hydrochloric acid after mixing in a mechanical blender. Each food allowed *ad libitum* was prepared for storage in a similar fashion. The feces, which were marked with carmine every four days, were collected in polyethylene-lined boxes, made into four-day composites, heated with hydrochloric acid, and forced through a Buchner funnel. The urine was collected in glass bottles sealed with parawax; enough hydrochloric acid was added to the four-day composites to make a 2 per cent solution. The food and feces were dry-ashed at 500°C. for 20 hr., and the food was re-ashed for 20 hr. Although most of the samples of urine were not ashed, a few, which were very low in calcium content, were ashed to bring the calcium concentration up to the minimum required for the method. Calcium was determined by the micro-method for plants described in the Official Methods of the Association of Official Agricultural Chemists (6) except that the calcium oxalate was dissolved in perchloric acid and titrated in a darkened room with ammonium hexanitratocerate, according to the method of Salomon *et al.* (7). Phosphorus was determined by the method of Simmons and Robertson (8).

TABLE 2 Customary calcium intakes and mean daily calcium balances of the subjects during a twenty-day metabolic period

SUBJECT	CALCIUM					
	Customary intake*	Food	Urine	Feces	Balance	Apparent absorption†
	Women					
	mg.	*mg.*	*mg.*	*mg.*	*mg.*	*%*
C	400	426	197	314	−85	26
D	400	364	36	323	+5	11
J	300	306	71	232	+3	24
	Men					
B	600	588	130	334	+124	43
L	600	641	125	456	+60	29
R	500	520	189	410	−80	21
P	500	498	160	344	−6	31

*Estimated by calculation from a dietary record.
†Fecal calcium subtracted from food calcium, with no correction for endogenous calcium.

Results and Discussion

CALCIUM

According to the calculation of the dietary records for a week, the customary daily intakes of the subjects varied from 300 mg. calcium for Subject J, who was a small woman, to 600 mg. for two tall men, Subjects B and L (Table 2). An allergy to milk, diagnosed in Subject L at age ten or eleven, had forced him to reduce his milk intake, but at eighteen years of age when he served as a subject he was still drinking a little.

Subject D grew up in Thailand where sanitary milk was difficult to obtain. She drank a cup of reconstituted dry milk each day until she was ten or eleven years old and from that time had very little milk in cooked foods and none for drinking; and she ate almost no cheese. She occasionally ate tiny whole fish. At age eighteen, eight years before she served as a subject, an allergy to milk was diagnosed. Therefore, she did not drink milk when she came to the United States. During her lifetime, she had had less milk in her diet than any of the other subjects.

Probably Subject J ranked next; she reported drinking about one glass every two weeks for the last three years. Subject P reported drinking no milk except during vacations. The rest of the subjects reported drinking one or two cups of milk a week. All ate ice cream and cheese occasionally and some cooked foods that had milk in them.

Calcium intake during the metabolic period approximated fairly closely the estimated customary intake. It ranged from 306 mg. to 641 mg. per day (Table 2). If calculated to a basis of 3000 calories per day, the intakes ranged from 388 to 533 mg. per day. This narrowing of the range on a caloric

basis would be expected because of the wide differences in caloric intake: the range was from 1940 calories for Subject J to 3860 for Subject P. The caloric and protein intake was calculated from the weight of foods eaten, using the values listed by Watt and Merrill (9). Considerable meat was added to the diet to keep the protein intake normal despite the small quantity of milk. The mean intake of protein for the women was 75 gm.; for the men, 104 gm. per day.

Two of the men retained large amounts of calcium (Table 2). Their intakes were near 600 mg. per day and were the highest in the group. They were tall men with relatively high needs, not only because of their size but for other reasons. One, Subject L, who retained 60 mg. per day was eighteen years of age and was allergic to milk. While he had stopped growing in height, he may have needed calcium to raise the calcium content of his bones to a normal adult level. His behavior was similar to that of two men in a previous study by Thorangkul *et al.* (5) who were of approximately the same age and also allergic to milk. The reason for the retention of 124 mg. by Subject B was puzzling. For some years he had been losing protein in his urine due to kidney damage. His physician had reported recovery shortly before the beginning of the experiment and at the time of the physical examination performed to qualify him as a subject, he was losing no protein in the urine. Possibly he had lost calcium and phosphorus as well as protein and, therefore, needed to replenish his stores of these elements.

Three subjects, D, J, and P, were in approximate balance. Subject D absorbed the lowest percentage of calcium (Table 2) of any of the subjects despite the many years of low-calcium intake that preceded the study. She attained balance because of the small amount lost in the urine.

Two subjects, C and R, who were both overweight, were in definite negative balance. Subject C lost 1.9 kg. during the experimental period, and this may have been one cause of the loss. Possibly both had been eating foods between meals which they forgot about in trying to recall their food habits, or possibly they ate a considerable quantity of cooked, milk-containing foods about which no data were gathered. Their servings may have been larger than estimated, since their caloric intake during the week of the dietary record was considerably below the number of calories they needed to maintain weight during the metabolic period.

The retentions found in this study may be compared with those found by Malm (10). After maintaining twenty-six men on a daily calcium intake of about 450 mg. for varying lengths of time (eighty-four to 406 days) following a change from an intake of approximately 900 mg. per day, he found that of the twenty-three men who adapted, only eleven achieved a calcium balance by the end of his long study. This was a lower proportion than in the present study during which five out of seven were in balance.

The conclusion from the present study is that college students who drink little milk adapt in time so that the amounts of calcium in their diets cover their needs. Calcium adaptation can function in three ways: by an increase in the amount absorbed, by a decrease in endogenous calcium which increases apparent absorption, and by a decrease in urinary calcium.

With one exception, these subjects had not adapted by an increase in the amount of apparent absorption. The apparent absorption of Subject B was unusually high (43 per cent) according to Brine and Johnston (11), who found by a review of the literature that for subjects, adapted and unadapted, on intakes of 400 to 599 mg. calcium per day, the mean apparent absorption was 28 per cent; Malm found that twenty men after adaptation to some extent on an intake of approximately 450 mg. showed an apparent absorption of 43 per cent.

Five subjects in the present study apparently had adapted by a decrease of urinary calcium. Undoubtedly Subject D, who had the longest history of a low-calcium intake, had completely adapted. Her urinary calcium loss was 36 mg. per day which is about as small a loss as can be found in the literature from among individuals receiving adequate vitamin D. Subject J, whose dietary history showed the next lowest amounts, also lost very little (71 mg.) in the urine. Subjects B and L, however, lost less in the urine than Subject J in relation to the intake during the experiment. Thorangkul *et al.* found (5) an immediate drop of large proportion in urinary calcium in response to a lowering of the calcium intake to about 200 mg. Then there was a slight rise after about four days followed by a slow fall of about 20 mg. over a period of three months. If this rate of fall had continued, it would have taken two years or longer for the adaptation of urinary calcium to the low intake.

The high urinary values of Subjects C and R may be evidence of a higher habitual intake of calcium than the estimate. The calcium content of the 24-hr. sample of urine taken during the week of the dietary record was lower than that during the study which may indicate a lower intake of calcium during that week than during the study. The lower value may have been fortuitous, since there is some variation from day to day. Moreover, some of the loss from Subject C during the metabolic period may have been due to weight loss.

The adaptation of the calcium in the urine in this study is not in agreement with the study by Malm (10). He found no adaptation in urinary values. The mean urinary calcium of twenty subjects who

had adapted to an intake of approximately 450 mg. was reported as 200 mg. per day, a value higher even than the highest found in the present study.

Adults need to retain a small amount of calcium to cover the small losses of calcium in sloughed-off skin, hair, nails, perspiration, and so forth which are not measured in balance studies. Possibly 10 mg., but surely 20 mg., would be sufficient to cover this loss. In this study, two subjects retained much more than this. All might have retained more at another time of the year. The study was conducted in April, a time when Malm as well as McCance and Widdowson (12) have found retention to be somewhat low.

PHOSPHORUS

According to calculations made on the dietary records kept for a week by the subjects, the customary intakes of phosphorus ranged from 800 to 1650 mg. per day (Table 3). These intakes were similar to the range of 891 to 1464 mg. used during the metabolic period (Table 3) and were equivalent to 1100 to 1400 mg. per 3000 calories per day. The habitual intakes of five subjects were near or higher than the 1200 mg. recommendation made by the National Research Council (4) when the calcium intake is about 800 mg. per day. The intakes for two of the women, D and J, were below the recommendation and below the amounts estimated by McKay *et al.* (13), Leverton and Marsh (14), and Scoular *et al.* (15) as necessary for maintaining phosphorus equilibrium in women. One of them, Subject J, was small (5 ft. 1 in.); consequently her needs were lower than average.

Five subjects were in negative balance and the two (Subjects B and L) who retained large amounts of calcium, retained phosphorus (Table 3)—probably for the same reasons, namely, a need for the element and also a higher phosphorus intake than the others. In a previous study in this laboratory, Johnston and Thorangkul found (3) that subjects on a moderate phosphorus intake who were reduced to a calcium intake of about 200 mg. and were in positive balance at the start, were in negative balance after three months. Apparently the low-calcium content of their diets caused the phosphorus to become inadequate. These negative phosphorus balances are puzzling because the subjects had been living on these calcium and phosphorus intakes for some years and seemed to be in good physical condition. Temporary negative balance results from a change from a high intake to a lower one. Possibly the subjects' customary intakes of phosphorus were higher than the diets reported by them indicated. Accurate records of food intake are difficult to obtain because subjects are unskilled in estimating portion size and often recipes for the dishes used are not available. Also, people cannot recall past dietary patterns with accuracy and, furthermore, deviations from them are often more frequent than they realize. In addition, the possibility exists that the unnatural situations which studies of this nature impose on the subjects may result in emotional stresses which might interfere with the retentions of nutrients. That these negative balances may have been temporary means that a longer balance period would have been advantageous.

TABLE 3 Customary phosphorus intakes and mean daily phosphorus balances of the subjects during a twenty-day metabolic period

SUBJECT	PHOSPHORUS					
	Customary intake*	Food	Urine	Feces	Balance	Apparent absorption†
	Women					
	mg.	*mg.*	*mg.*	*mg.*	*mg.*	*%*
C	1140	1188	882	358	−51	70
D	970	954	713	299	−58	69
J	800	891	687	250	−46	72
	Men					
B	1650	1453	994	280	179	81
L	1600	1464	989	388	87	73
R	1190	1224	990	309	−75	75
P	1240	1394	1065	377	−48	73

*Estimated by calculation from a dietary record.
†Fecal calcium subtracted from food calcium, with no correction for endogenous calcium.

Few studies dealing with habitual low-calcium intakes have been conducted in which both calcium and phosphorus balances have been reported on the same individuals and for which a record of the customary diet is available. Leverton and Marsh reported (13) a study of 100 subjects on self-selected diets for one week. In the group were eighteen subjects on intakes between 400 and 600 mg. calcium. The mean daily phosphorus intake was 870 mg. and the mean balance was —37 mg. per day.

Leichsenring *et al.* (16) held five subjects on an intake of approximately 300 mg. calcium and 800 mg. phosphorus for eight weeks. Presumably their subjects had been accustomed to higher intakes of both elements because they were selected from college students without regard to habitual intakes. For the first six weeks they were in positive balance and in the seventh and eighth weeks they lost 88 mg. per day. Their subjects are not comparable to those in the present study unless the assumption is made that six weeks is long enough for adaptation to a lowered phosphorus intake and the values for the last two weeks are adapted values. Also, they were in negative calcium balance which might induce a loss of phosphorus. Six weeks may be sufficient for adjustment to the low phosphorus intake at a low-calcium level, although the subjects of Johnston and Thorangkul continued adaptation of phos-

phorus through three months following a decrease in both calcium and phosphorus intakes.

The finding in the present study of negative phosphorus balances on calcium intakes of 400 to 500 mg. per 3000 calories indicates that caution should be used in drawing a conclusion that this level of calcium is satisfactory.

Summary

Four young men and three young women who customarily drank little milk and whose customary daily intakes during the last three years, as estimated from a dietary history and a week's dietary record, ranged from approximately 400 to 500 mg. calcium and 1100 to 1400 mg. phosphorus per 3000 calories, were placed for twenty days on a weighed diet containing approximately the same amount of calcium and phosphorus as their customary intake. During the experimental period, the urine and feces and duplicates of the food consumed were collected for determining calcium and phosphorus.

Two of the men retained large amounts of both calcium and phosphorus. One was eighteen years of age and allergic to milk; the other had suffered kidney damage which had caused a loss of protein in the urine and possibly calcium and phosphorus. His kidney function was normal at the time he served as a subject. Need may have caused these men to retain well. Three subjects were in calcium equilibrium. Two subjects were in negative balance; one lost some weight during the experiment and both may have had higher intakes of calcium than their dietary histories indicated.

These results led to the conclusion that 400 to 500 mg. calcium daily are sufficient for equilibrium if continued for a period as long as three years. On the other hand, five subjects were in negative phosphorus balance, leading to the conclusion that a low-calcium intake may adversely affect phosphorus retention and that a desirable allowance for calcium may exceed 400 to 500 mg. The study also shows the importance of following both elements in studies of requirement.

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Today's College Student

We quote from the April 1961 issue of the *Brown University Alumni Monthly:*

The college student, they say, is a young person who will

. . . use a car to get to a library two blocks away, knowing full well that the parking lot is three blocks on the other side.

. . . move heaven, earth, and the dean's office to enroll in a class already filled; then drop the course.

. . . *complain bitterly about the quality of food service in the college dining halls—while putting down a third portion* (italics ours).

. . . declaim for four solid years that the girls at his institution or at the nearby college for women are unquestionably the least attractive females on the face of the earth; then marry one of them.

Food Eaten by Athletes[1]

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NUMEROUS STUDIES concerned with the foods consumed by college women and a few with the food eaten by men have been published. None have been concerned with the food of athletes. Since 435 colleges and universities are members of the National Association of Inter-Collegiate Athletics (1,2), the food consumption of these young men is of interest to the institutional dietitian responsible for their food. Consequently, the present study was undertaken to calculate the nutritional value of the food intake of male college athletes eating a self-selected diet in the athletes' dining room.

Procedure

The sixty athletes studied attended North Texas State College in the spring of 1958 and the following school year. Thirty-four were football players (Group F); sixteen played basketball (Group B); and ten were track men (Group T). Their ages ranged from eighteen to twenty-five years, with a mean of 18.9, 20.6, and 20 years for Groups F, B, and T, respectively.

To ascertain the food consumed by each of these groups, charts were set up for each meal's menu and the food on each subject's tray was checked for the number of servings of each item, as he passed through the cafeteria line in the special athletes' dining room. Condiments, jelly, and honey were available *ad libitum*. Since they served themselves these items, it was impossible to keep an accurate measure of the amounts used; thus these items were not included in the calculations of the individual's total daily intake. The only exception was the pre-game or pre-event[2] meal, which was not included in the calculations. The men taking part in this study had specially marked trays to identify their plate waste and to insure that all of their trays were checked for waste. The plate waste at each meal was deducted from the original food selection totals in calculating the nutrient content of the individual diets.

It was possible to obtain the food consumed by the members of each sport group separately, because of the different periods of training and competition. The food eaten by each group was tabulated during three periods: the first period ("pre") while the team was in training prior to the actual competitive season; the second period ("par") during the competitive season; and the third period ("post") following this period when the men were at rest as far as sport participation was concerned. The periods were from Monday through Friday inclusive, except for Group F. This group was frequently out-of-town on Friday during the "par" period. No "post" period was possible with Group T because they were not in college residence at the time.

The daily food intake was calculated, using the values of Bowes and Church (3). The data were averaged for each individual of each group and for each period for comparison with the Recommended Dietary Allowances (4) for the nineteen-year-old boy. Since the average age of three groups was 19.8 years, it seemed probable that this allowance would more nearly represent their needs than the next age group of twenty-five years of age.

Results and Discussion

The athletes of this study ranged in weight from 130 to 260 lb. and in height from 68 to 79 in. (Table 1). From this table it is evident that the men in Groups F and T were similar in height while those in Group B were the tallest. The weight averages in descending order were, for Groups F, B, and T: 198, 185, and 157 lb., respectively. The caloric allowance for these groups was calculated using the formula suggested by the National Research Council[3] for use in adapting caloric allowances for individuals whose weight and height are different from those of the reference man. Using these mean weights, the calculated caloric allowances are given in Table 2 in descending order with the calculated average daily intake of each group for periods "pre", "par, and "post" participation.

The adjusted caloric allowance for each group was

[1]Presented in partial fulfillment of the requirements for the degree of Master of Science in food and nutrition by Rachel Wilkins Mays.

[2]This menu was requested by the coaching staff and consisted of roast beef, baked potato, sliced canned peaches, dry toast with honey, and hot or iced tea.

[3]Caloric allowance for men: 0.95 (815+36.6W) with desirable weight (W) representing the mean weight in kilograms of each group.

TABLE 1 **Height, weight, and age of athletes included in this study**

GROUP	NUMBER	HEIGHT		WEIGHT		AGE	
		Range	Mean	Range	Mean	Range	Mean
		in.	*in.*	*lb.*	*lb.*	*yr.*	*yr.*
Football	34	68—75	72	160—260	198	18—25	18.9
Basketball	16	68—79	75	163—220	185	19—22	20.6
Track	10	68—74	71	130—195	157	18—22	20.0

considerably less than the calories calculated on the basis of food consumed. Furthermore, the food consumed did not include condiments served at the table or snacks which may have been eaten. It may be assumed that the average caloric intake of each group during each period was greater than the value recorded in Table 2.

Only Groups B and T selected diets containing almost identical calories in the "pre" period, although all three groups had similar caloric intakes during the "par" period. Group F consumed fewer calories in the "post" period while Group B had approximately the same caloric intake as for the "par" period. It was unfortunate that it was impossible to get Group T's intake during the "post" period.

The percentage distribution of these calories was 13 to 16 per cent from protein, 42 to 46 per cent from fats, and 38 to 44 per cent from carbohydrates for the three groups. The percentage of protein was higher and the carbohydrates lower than those usually given as general population averages.

The calculated protein intake varied less than the calories during each period, although Group F averaged slightly less (20 gm.) during the "post" period. Unlike the calories which were similar during the "par" period, only Groups F and T had identical protein intakes. Group B averaged about 30 gm. less protein than F and T for the "par" period.

Calculated fat intake varied from 210 gm. for Group F "post" period to 240 gm. for the "par" periods for Groups F and T. In general, the grams of fat during these periods followed the protein trend for each group, also. That milk was the greatest single source of fat calories in the diets of soldiers was reported by Konishi and co-workers (5). A similar high intake of milk accounted for one-third of the day's fat in the diet of these athletes. Margarine and hydrogenated fats, meat and milk fats provided 36 per cent of the total calories, whereas Keys and Keys state (6) that these sources of fat should not exceed 6 to 7 per cent.

Group F had a markedly higher carbohydrate intake (560 gm. as compared with 430 and 410 gm.) during the "pre" and "post" periods, while Groups B and T had less during the "pre" period and Group B had more during the "post" period.

The fluid milk which contributed to the high-protein intake accounts for a large amount of the calcium and phosphorus of these diets (Table 3), which averaged 1.86, 2.22, and 2.20 gm. calcium and 2.63, 2.76, and 2.67 gm. phosphorus, for Groups F, B, and T, respectively. The number of servings of both meat and eggs, with cooked dried beans and peas, provided generous amounts of iron, namely, 25.0, 19.4, and 21.6 mg.

The fluid milk was one of the principal sources of vitamin A, although green and yellow vegetables were abundant in the diet also. The daily average was twice that of the recommended allowance for vitamin A for boys of this age.

Both milk and meats helped to provide the high intakes of riboflavin. All three groups exceeded the maximum value of corrected allowances by approximately 1 mg. The highest average intake was 4.01 mg. and the lowest 3.41 mg.

Similarily, the number of servings of fluid milk and of meat increased the niacin-plus-niacin-equivalent values to approximately twice the calculated allowance of 25 mg., namely 51, 44, and 50 mg. for Groups F, B, and T, respectively. The serving of these same foods tended to lower the thiamine intake, since milk is low in this vitamin and the meats were not lean pork, as a rule. The quantity of cooked beans and peas was not large enough to contribute as much to the thiamine intake as they did to the iron intake. However, all rolls, breadstuff, cakes, and pastries were made with enriched flour and probably contributed more to the thiamine than the calculated values show. Nevertheless, for the large caloric intakes observed, the thiamine might need

TABLE 2 **Calculated calories, protein, fat, and carbohydrate in the self-selected diets of each group of athletes during each period**

GROUP	ADJUSTED CALORIC ALLOWANCE	CALORIES			PROTEIN			FAT			CARBOHYDRATE		
		Pre	Par	Post	Pre	Par	Post	Pre	Par	Post	Pre	Par	Post
					gm.	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*
Football	3,910	5,030	4,600	3,570	180	180	160	230	240	210	560	430	410
Basketball	3,690	4,200	4,470	4,630	150	150	160	220	230	230	380	450	480
Track	3,200	4,390	4,680	—	170	180	—	230	240	—	410	450	—

TABLE 3 Calculated mineral and vitamin content of self-selected diets of each group of athletes during each period

PERIOD	CALCIUM	PHOSPHORUS	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN*	ASCORBIC ACID	VITAMIN D
				Group F					
	gm./day	*gm./day*	*mg./day*	*I. U./day*	*mg./day*	*mg./day*	*mg./day*	*mg./day*	*I. U./day*
Pre	1.67	2.62	26.4	13,196	2.90	3.56	57	186	428
Par	2.03	3.18	24.5	9,774	2.78	4.04	56	87	369
Post	1.87	2.08	24.1	14,459	2.41	2.64	51	209	349
Average	1.86	2.63	25.0	12,476	2.70	3.41	51	161	382
				Group B					
Pre	2.23	2.93	20.3	9.287	2.20	3.89	44	133	412
Par	2.09	2.53	18.1	16,104	2.00	4.01	43	95	440
Post	2.35	2.81	19.8	9,618	2.24	4.12	46	138	452
Average	2.22	2.76	19.4	11,670	2.15	4.01	44	122	401
				Group T					
Pre	2.12	2.65	19.9	10,000	2.23	3.98	50	136	438
Par	2.27	2.68	23.3	11,431	2.31	3.76	49	253	601
Average	2.20	2.67	21.6	10,716	2.27	3.87	50	195	520

*Includes niacin equivalents from protein.

increasing since the average amount calculated in these diets may not have been present, due to the detrimental effects of cooking procedures on thiamine.

The calculated ascorbic acid values of these diets included more cooked fruit and vegetables than raw for which reliable values are not available. Consequently, it is assumed that what appears to be excess ascorbic acid in these diets, may not actually have been received. With the high-calcium intake, an increased use of citrus fruits, tomatoes, and raw cabbage might be needed for the best utilization of calcium.

Calculated vitamin D ranged from an average of 382 I.U. for Group F to 520 I.U. for Group T. Since both Groups F and T practiced as well as participated out of doors, they probably received ample vitamin D from body irradiation alone, whereas, Group B, with indoor practice and participation, may need more of this vitamin from food sources. Their calculated average for the three periods, however, met the recommended allowance of 400 I.U.'s.

According to Keys and Keys (6), the amounts of food needed and allowable for the athlete depend on how big he is and how hard he trains. He needs the extra calories and about the same amount of, and kind of, proteins, vitamins, and minerals as anyone else. These authors see no reason why the athlete should not thrive without a vast amount of saturated fats.

Summary

The self-selected food intake of sixty athletes—thirty-four football, sixteen basketball, and ten track men was calculated for five days each during "pre", "par", and "post" participation periods.

Although the calories varied from period to period for the three groups, their total caloric averages were similar, namely, 4400, 4400, and 4535 calories. The protein percentage of these calories was 13 to 16 per cent; for fat, 42 to 46 per cent; and for carbohydrate, 38 to 44 per cent.

These high caloric diets contributed minerals and vitamins in excess of the adjusted recommended allowances, with the possible exceptions of thiamine and ascorbic acid, both of which may have been less than the calculated values, since food processing procedures affects them adversely.

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Fifteen words of wisdom must be used daily in order to foster good relationships among employees, according to Dr. Earl S. Thompson, The Pennsylvania State University. They are: "I am proud of you!" "What do you think" "If you please!" "Thank you." "We."—*From Bulletin of the Delaware Dietetic Association, June 1961.*

Developments in Testing Utensil Sanitation[1]

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NEW DEVICES and testing procedures are constantly being devised to aid in solving the problems of supervisory personnel responsible for utensil cleaning and sanitizing. Unfortunately, information on such developments is frequently not made available to dietitians and restaurant managers who would find the greatest application for this knowledge. Therefore, a review of some of these recent developments seems appropriate.

Test for Measuring Surface Cleanliness

In July, 1960, the author, along with G. M. Ridenour and J. R. Pelton, reported on a field test procedure for cleanliness measurement of multiple-use utensils (1) before the National Association of Sanitarians. The need for an adequate field test for measuring effective cleaning procedures has long been apparent. While a number of procedures have been proposed, none has been used extensively, probably due to difficulties of field application. The new proposed procedure makes use of the natural soil on dishes, and it measures residuals of fats, oils, proteins, or starches which remain on an improperly washed utensil. Everyone has encountered the greasy feeling of visibly clean dishes, glasses, or silverware at some time, indicating that fats, greases, and oils constitute a class of food soils difficult to remove. Consequently, their presence or absence is one of the best indicators of effective or ineffective cleaning procedures. These substances occur not only in the natural composition of food, but they are used extensively in the preparation of a considerable portion of each meal. Therefore, they are always present and no artificial test soil is needed.

One approach to the problem of visible detection of grease films was to adsorb a powder to the grease as used in the detection of fingerprints. A number of insoluble colloids were investigated and performed excellently in this respect. Among these was common talc. Since the talc is white, a water-soluble dye was added to give it color. It was found that this procedure not only permitted the staining of the grease residuals on the surface, but also allowed us to stain protein and starch films too thin to be readily visible to the naked eye.

The reagent consists of a mixture of 85 per cent talc[2] and 15 per cent Safranin-O[3] by weight. These two powders are mixed in a bowl and then put into a common salt shaker. This dye mixture is then gently dusted over the surface to be examined from a height of not more than 2 in. For cups and glasses, the powder is dusted over the inner bottom surface only. A light application of the powder will suffice, and it is not necessary that the entire surface be covered. Before dusting a surface, it is necessary that it be thoroughly dry. Experience has shown that the dusting is best done in a deep sink.

The treated utensil is now held under a flowing tap for at least five seconds, or until no remaining trace of red color is rinsing off. The utensil is then drained on edge in the case of dishes, or upside down in the case of cups or glasses, until dry. Any red color on the utensil is an indication of a soiled area. The intensity of this red color is roughly quantitative with respect to the amount of residual soil on the surface. Water or detergent spots have not been found to interfere as they do not stain. Sugar solutions also do not stain, since they are washed off during the removal of the excess dye reagent. The stained soil may be easily removed by a proper dishwashing operation.

In our laboratories we have found this test to work on a large variety of materials, such as glass, china, silverware, stainless steel, and most of the common plastic ware. Melamine dishes, however, can be measured by this procedure only while they retain the mold finish. When melamine ware has been so badly worn that the old finish has been removed, false staining action may at times result. However,

[1]Presented at the 43rd Annual Meeting of The American Dietetic Association in Cleveland, on October 19, 1960.

[2]Talc #6460, available from Chemical Division, Merck and Company, Rahway, New Jersey.

[3]Available from National Analine Division, Allied Chemical Corporation, 40 Rector Street, New York City.

in our radioisotope studies, we have shown that badly worn plastic surfaces cannot be cleaned by any common washing procedure.

While this field test provides a gauge for dishwashing effectiveness in a given food service establishment, its main advantage is that the supervisor can make his inspection during the slack periods to check the effectiveness of the cleaning operation carried on during busy periods. Improper washing due to insufficient detergent, improper detergent, overloading of dishwashing racks, and clogged jets are easily recognized from the appearance of the treated dishes. When an entire rack of dishes is examined by this procedure, it is possible to evaluate the general dishwasher spray pattern.

A very good operation will produce a dish which will take up no stain whatsoever. A just-passing operation may show a very faint pink haze, while an improper operation invariably shows a great deal of red color. Another advantage of this procedure is that it may be used to determine whether the clean dishes have been handled properly after washing. Fingerprints will show up as red smudges and are easily recognized by the whorl pattern.

In the laboratory, detergents have been compared by this procedure. It is also possible to determine detergent concentrations which are required for the detergent in question in relation to the particular machine to produce effective cleaning. When this is done, we use china dishes which are first hand-scrubbed with a kitchen cleanser, dried, and soiled with a small amount of cooking oil or grease. They are then washed in a conventional dishwasher, dried, and the grease residual stained.

In some of our field studies, we have found with dishes improperly washed for a long time on which such a strongly bound soil film has been built up that up to twelve proper washings were required to produce a truly clean surface. We have also found dishes so badly worn that they were no longer capable of being cleaned by the particular dishwasher and detergent in use at that time, even under a proper operation.

Test for Detergent Concentration

While the field test for soil residuals may function as an aid in determining the proper detergent and detergent concentration for a dishwasher, the scheduling of additions of compound to the machine and adjustment of the various mechanical and electrical dispensers remain a major problem. Hokom and Labat have proposed (2) a procedure based on measuring the alkalinity produced by most common machine detergents. Their original procedure proved too cumbersome for field use, but a modification of this method, using the same principle, is promising, even though some accuracy has been sacrificed to achieve simplicity.

The procedure used in making a detergent concentration determination is as follows:

(a) A small vial, marked at the 20-ml. level, is filled with the detergent solution from the dishwasher.

(b) An acid-indicator solution is added drop by drop with a calibrated eye dropper. Only droppers which deliver approximately 20 drops per milliliter are satisfactory.

(c) Count the number of drops added until the solution turns from a green to a pink-purple.

Before the results of this procedure become meaningful, a calibration of the indicator-acid reagent to the detergent is necessary. A gallon of detergent is accurately prepared at the desired concentration, using the same water source utilized in the dishwasher. The number of drops required to neutralize 20 ml. of this solution can be considered as 100 per cent. Then a simple ratio of the number of drops added to used detergent solutions will provide an approximate percentage as related to the desired concentration. For example, if 20 drops of acid-indicator were used in calibrating the detergent sample and 10 drops were used in a sample from the machine, the detergent concentration in the machine would only be 50 per cent of that desired.

The acid-indicator is prepared by adding 1.4 ml. concentrated sulphuric acid to approximately 70 ml. distilled water. To this add, 20 ml. methyl-purple indicator[4] and accurately bring the total volume up to 100 ml. with distilled water. The solution is now ready for use, and if kept in a tightly stoppered container, it will be quite stable.

This procedure is applicable only to alkaline detergents which fortunately constitute the major class currently used in dishwashers. Each detergent, however, must be calibrated independently, since the various brands will differ in amount of titratable alkalinity. Highly chlorinated compounds bleach the indicator dye; hence it is necessary to add 1 ml. of a 10 per cent sodium thiosulphate to the detergent solution in the vial prior to measuring this class of detergents.

Dishwashers, by design, dilute the wash water during operation in an effort to reduce the organic lead. By using this test procedure, it is possible to determine the amount of detergent to be added after a given number of racks have been washed so that a reasonable concentration of detergent can be maintained. Proper scheduling of detergent additions will not only provide the concentration necessary for good practice, but will also eliminate waste due to periodic overdosage.

Another use for this procedure is to check the automatic detergent dispensers. By making a series of titrations during a washing operation, it can be determined whether the dispenser is keeping the concentration at the proper level.

[4]Available from Fleisher Chemical Company, Benjamin Franklin Station, Washington 4, D.C.

It must be remembered, however, that even with sufficient detergent, the dishwasher will not function properly if it is loaded with garbage and high bacterial contamination.

Automatic Cold Water Glasswashers and Dishwashers

A totally new method of washing and sanitizing glasses has also been developed through a research study of the National Sanitation Foundation (3). The following principles were set up as a guide.

(a) The washer must overcome the objection of washing glasses in a sink where other utensils are washed or where used water is employed for washing.

(b) The washer must contain brushes revolving on both the inside and outside of the glass to provide the mechanical action necessary for efficient and effective soil and bacterial removal.

(c) Fresh water should be applied initially to the glass to act as a flush for the gross soil, thus enabling subsequent treatments to function more effectively.

(d) The wash water should contain a detergent-sanitizer effective in cold water. With the gross soil removed, the detergent could then act more effectively on the glass surface and the sanitizer is able to act on the unprotected bacteria, a requirement of proper chemical sanitization.

(e) The wash is followed by a clear rinse to remove excess detergent-sanitizer.

(f) All used water must immediately flow out of the washer so that there is no reservoir of contamination.

(g) Most important is that the glasswasher itself must be self-cleaning and self-sanitizing, while in use.

These washers are based on the fundamental that sound and effective sanitization involves soil and bacteria removal in a sanitized environment. The present hand method of washing in a sink must of necessity rely on the application of heat or chemicals to produce a safe utensil.

A glass is washed and sanitized by cold water in 3 to 4 seconds in these washers. When the glass is pressed all the way down on the center brush, the cycle starts with fresh water through this brush as well as on the outside brushes. Both the inside and outside brushes revolve. This is followed by an automatic dispensing and application of an iodophor detergent-sanitizer at a high concentration along with continued scrubbing action. The fresh water rinse, still accompanied with the scrubbing completes the cycle.

Probably the advent of the iodophor-type detergent-sanitizers is one of the keys to the success of this cold water sanitizing procedure. These compounds make it possible for the entire cleaning head of the unit to be self-sanitizing while sanitizing the glass itself and producing high soil removal.

At present, the National Sanitation Foundation has awarded its seal of approval to two manufacturers who are already marketing these devices. In a series of field tests where the glass washers were compared with the three-compartment washing procedure, the washers proved far superior.

Summary

A simple field test procedure has been presented which provides a visible measure of residual films of greases, proteins, or starches on an eating utensil surface. This provides an immediate means of identifying the efficiency of cleaning procedures as well as poor practices in the handling of utensils after cleaning.

A second field test was described which aids in scheduling detergent to a dishwasher so as to provide a reasonable concentration at all times.

A cold water glasswasher has been discussed. The principles upon which this washer is designed are basic to any cold water sanitization process.

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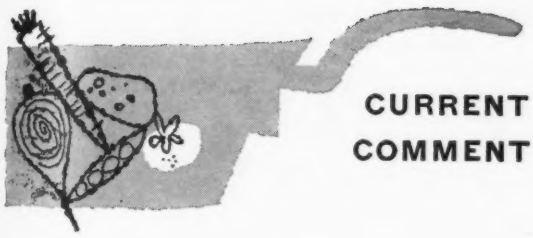
Hospital Food Costs

Cost trends in 108 hospitals in the metropolitan New York area were recently reported in *Hospitals*. In 1937, 27 cents of every expense dollar went for food service in these hospitals; in 1947, 20 cents; but in 1959, only 12 cents.—*From Roswell, C. G.: Hospital costs . . . yesterday, today and tomorrow. Hospitals 34:42 (June 16), 1961.*



CURRENT COMMENT

Dinnerware Usage in Large Hospitals[1]

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SINCE PLASTICWARE was introduced during World War II, there has been much controversy over its merits compared with those of chinaware, as well as glassware, paper, and stainless steel service for hospital use. Recently, a survey of 182 large hospitals of over 300-bed capacity in Indiana, Illinois, Michigan, Ohio, Pennsylvania, New Jersey, New York, and Wisconsin showed that the use of plastic dinnerware has increased in the past five years.

Prior to the survey, the related literature was reviewed regarding previous similar surveys. In 1949, Carr surveyed 500 hospitals in California, Illinois, Michigan, Minnesota, and Texas for the American Hospital Association's Committee on Purchasing, Simplification, and Standardization. From the 172 questionnaires returned, Carr reported (1) that plastic dinnerware was then being used in 26 per cent of the hospitals. In the same year, *Hospital Management* found (2) many testing programs under way for plasticware. Of the 153 hospitals which replied to the questionnaire, fifty-five were satisfied with plasticware and forty-two dissatisfied, while the remainder were still conducting tests. Ten years later, in 1959, Norris reported (3) on 1049 replies to questionnaires on practices in food service units. While chinaware was preferred, plasticware was used entirely in 7 per cent of the reporting institutions, and 18 per cent used some plasticware. Other authors have cited advantages and disadvantages of both chinaware and plasticware (4-6). The contradictory conclusions regarding cleaning and sanitizing procedures by Armbruster and Ridenour (7) and Mallman, Kahler, and Butt (8) were reviewed.

In the present study, check lists were sent to 416 hospitals to determine dinnerware care, costs, and characteristics. The replies received from 182 hospitals, which represented more than 250,000 beds, indicated that chinaware alone was used in forty-seven hospitals, while plasticware only was employed in twenty-one. However, chinaware was used to some extent in 155 or 85.2 per cent of the hospitals, while some plasticware was used in 112 or 61.5 per cent. This varied from total usage to a single section of the hospital, such as personnel cafeterias, nurses' residences, or general patient service.

The main advantages of plasticware cited were resistance to breakage, lightness in weight, and minimum handling noise. The main disadvantages were reported as staining, loss of color, and difficulty in cleaning. Users of both chinaware and plasticware complained of staining, but there were more complaints regarding plastic dinnerware.

According to these replies, the use of plasticware in the large hospital has increased in the past five or six years. Thirty-three of the hospitals had used plastic dinnerware since 1955. The average time of all the hospitals using it was 6.5 years.

Comparative Costs

Regarding replacement, the cup was the item most frequently requiring replacement. This may have been due to loss, breakage or staining. The sauce dish took second place, probably because of its versatility as vegetable nappy, dessert dish, and salad bowl. Chinaware replacements and costs were higher in institutions which used it exclusively as compared with those in which only plasticware was used. On the average, annual plasticware replacement amounted to 33 per cent for the twenty-one hospitals using it exclusively. For the sixty-four hospitals using chinaware (forty-seven using only chinaware and seventeen using both types), 83 per cent replacement a year was reported. In those using chinaware alone, the figure was 93.3 per cent. In Table 1 are shown replacement percentages in 172 of the 182 hospitals participating in the survey. (In the ten not included, various combinations of three or more types of dinnerware were employed, and they were classified as "miscellaneous.") Replacement was calculated by dividing the total yearly replacement cost by the total value of dinnerware in service.

The average original prices of chinaware and plasticware as reported in this study were comparable. The average cost of the seven items in the hospitals using either chinaware or plasticware only are listed in Table 2.

When plasticware was used, 40 per cent of the hospitals found it necessary to change their methods of dishwashing to some extent. Plastic manufacturers do not recommend chlorinated detergents and advise instead, the use of oxidizing cleansing agents. However, many large hospitals utilize the chlorinated compound and replace badly stained items before breakage occurs. In considering the cost of

[1]Condensed from a thesis prepared in partial fulfillment of the requirements for a Master of Science degree at The Ohio State University, Columbus. Work done under the supervision of LeVelle Wood, Professor of Institution Management.

TABLE 1 **Replacement percentages for dinnerware in 172* hospitals**

SIZE OF HOSPITAL	NUMBER OF HOSPITALS	REPLACEMENT PERCENTAGE				
		China only used	Plastic only used	China and plastic used	China and paper used	China, paper, and plastic used
300-500 bed	68	81.4	41.2	57.6	48.4	52.6
501-1000 beds	41	80.9	27.6	51.5	84.5	89.2
Over 1000 beds	63	117.8	29.9	60.2	—	45.5
Average		93.3	32.9	56.4	66.4	62.4

*Ten hospitals of the original survey are not included because they used three or more types of dinnerware.

TABLE 2 Comparative cost of individual pieces of chinaware and plasticware

TYPE OF DISH	AVERAGE COST	
	Chinaware	Plasticware
Soup bowl	$0.58	$0.48
Dinner plate	.69	.72
Bread and butter plate	.36	.41
Cup	.52	.45
Saucer	.37	.37
Sauce dish	.37	.31
Salad plate	42.	.44

dinnerware, it is well to remember the cost of the added labor needed with plasticware for complicated destaining procedures, as well as chinaware. If plasticware is replaced immediately when severe scratching and staining appear, the replacement percentage would probably be higher. More than thirty brands of detergents were used by the 182 respondents.

Today's dietitian must weigh the advantages and disadvantages of these two types of dinnerware, as well as glassware, paper, and stainless steel, in selecting what will be the best and most satisfactory dinnerware for her particular institution. The factors in such a decision include: cost, durability, attractiveness, handling noise, care, and weight, as well as the type of service and the type of hospital. Both chinaware and plasticware appear to be satisfactory for hospital food service.

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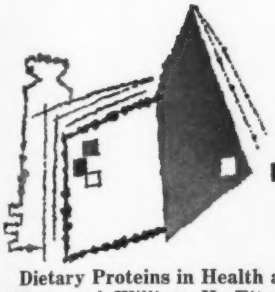
900-Calorie Diets

The popularity of the new 900-calorie diets has resulted in the Food and Drug Administration becoming concerned with the nutritional adequacy of such items. In general, we have found that, although the protein quality does vary somewhat among the different brands, from the nutritional standpoint, these products appear to be satisfactory for the relatively short period for which they would be the sole item of diet.

Since the primary purpose of these products is to reduce weight, we have had several conferences with various manufacturers in an attempt to evolve labels that will be truly informative to the consumer. A change from a customary diet of 3000 plus calories to one providing only 900 calories is quite drastic and could result in uncomfortable, although probably not harmful, physiologic effects. We, therefore, feel that the label should caution the consumer to use these products under competent medical guidance. We are maintaining a cost scrutiny of this aspect of the special dietary food market.—*From a paper by George P. Larrick, Commissioner of Food and Drugs, before the Food Industries Advisory Committee of The Nutrition Foundation, Inc., at Skytop, Pennsylvania, May 4, 1961.*



BOOK REVIEWS

Dietary Proteins in Health and Disease. By James B. Allison and William H. Fitzpatrick. Springfield, Illinois: Charles C Thomas, 1960. Cloth. Pp. 86. Price $4.50.

This book is one of the "Living Chemistry" series intended to advance the newer knowledge of chemical medicine. It gives a comprehensive interpretation of the biochemistry of food proteins and of the nutritional dynamics in protein metabolism. From their own research and that of others, these authors are thoroughly familiar with the many facets of protein synthesis and metabolism. They have written so clearly that the reader can visualize the dynamic concepts involved. There are 290 references.

The basic concepts reviewed include the need for continuous dietary supply of the indispensable amino acids; the dynamic state of some cellular pools of amino acids; and the hormonal influence on amino acid transport. A table of the indispensable (and related) amino acids shows the pattern in the major protein food sources. Labile reserves, which are present in many cells of the body, are used when dietary protein intake is inadequate. Protein reserves are important also in correcting imbalances in dietary amino acid intake; and establishing optimal reserves is considered one of the most important problems in nutrition.

The authors discuss the effects of protein malnutrition seen in kwashiorkor and other conditions; resistance to disease; and differences in wound healing. In rats, protection against the depleting effects of tumor on normal tissue was observed when casein was supplemented with methionine. Growth and maintenance requirements of amino acids are reviewed with comments on repletion data.

In determining the nutritive value of proteins, supplementation is of major interest since few ordinary diets are made up of single dietary proteins. The need is "to provide an efficient pattern of amino acids for protein synthesis and to balance properly the amino acids with the energy requirements." The most common reference pattern has been that of the essential amino acids in egg proteins. The Food and Agriculture Organization of the United Nations has developed a reference pattern from data obtained in studies where amino acids were used in the diet instead of proteins. A table is given of the indispensable amino acid patterns for maintenance and growth as compared with the reference patterns. In work on the development of vegetable mixtures, it has been observed that the chemical analysis for amino acids may not always give an accurate picture of the pattern of amino acids made available to the body by a mixture of dietary proteins. "Unbalance" has been defined as a protein low in one or more of the indispensable amino acids. "An 'imbalance' is the situation which develops upon the addition of an unbalanced protein to cause some adverse effect which can be prevented by supplementation."

Plasma and liver proteins have been studied extensively in relation to protein malnutrition. Increased uptake of labeled sulphur from methionine has been reported in animals and children with protein malnutrition; and this increase may be associated with reduced metabolic pool of amino acids and the conservation of certain body proteins. "The significance of dietary proteins in health and disease may center . . . around the importance of these protein reserves in homeostasis and/in resistance to stresses."—*M. Bartha Brandt, Research Assistant, The Chicago Lying-in Hospital, The University of Chicago Clinics.*

Cholesterol Control Cookery. Compiled and edited by Dorothy Revell. New York: Carlton Press, 1961. Cloth. Pp. 56. Price $1.95.

A more accurate and descriptive title for this book, but perhaps one with less popular appeal, would be "Cooking with the Polyunsaturated Fatty Acids." The recipes contain no added saturated fats and most of them use unsaturated oil. A chart, "The Basic 7 Food Groups Generally Used in High Poly-unsaturated Fatty Acid Diets," and "The Cholesterol Meal Plan Exchange List" will be helpful to the physician, dietitian, and nutritionist in giving dietary instructions. However, information is not included on the composition of the exchanges which would be necessary for use in translating dietary prescriptions into a meal plan. The author states that the doctor's dietary order will give the amounts of the servings.

There are recipes suitable for parties as well as for day-to-day meal planning. All ingredients used can be found in an ordinary grocery store and in a wine shop. The format and simple instructions make it possible to prepare a meal using these recipes in minimum time and with a minimum of effort. This book will lift the spirit of persons who enjoy good food but whose diet is restricted in the saturated fats and whose time and energy for food preparation are limited.

The book should have wide distribution and should be in public as well as professional libraries. It will make a delightful and inexpensive gift for the person who has been put on a diet to control the fat in the blood.—*Evelyn L. Anderson, Research Associate, Department of Public Health Nutrition, School of Public Health, University of North Carolina, Chapel Hill.*

RECENT BOOKS RECEIVED

Vegetarian Cookery. By Janet Walker. New York: Roy Publishers, 1960. Cloth. Pp. 213. Price $3.95.

Food Chemistry. By Lillian Hoagland Meyer. New York: Reinhold Publishing Corporation, 1960. Cloth. Pp. 385. Prices: college edition, $6.75; trade edition, $8.10.

The Golden Age Cookbook. By Phyllis MacDonald. Garden City, New York: Doubleday & Company, Inc., 1961. Cloth. Pp. 192. Price $2.95.

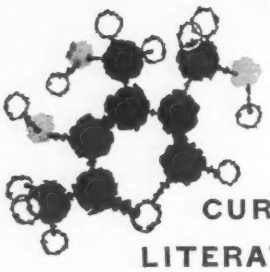
Health Organizations of the United States and Canada: National, State and Regional. Ithaca, N.Y.: Publications Section, Graduate School of Business and Public Administration, Cornell, University, 1961. Cloth. Pp. 191. Price $10.

Food Service in Industry and Institutions. By John W. Stokes. Dubuque, Iowa: Wm. C. Brown Company, 1961. Cloth. Pp. 261. Price $8.

365 Ways to Cook Hamburger. By Doyne Nickerson. Garden City, New York: Doubleday & Company, Inc., 1960. Cloth. Pp. 189. Price $2.95.

The Health Hucksters. By Ralph Lee Smith. New York: Thomas Y. Crowell Company, 1960. Cloth. Pp. 248. Price $3.95.

Fundamentals of Nutrition. By E. W. Crampton and L. E. Lloyd. San Francisco: W. H. Freeman and Company, 1960. Cloth. Pp. 494. Price $7.50.



CURRENT LITERATURE

Contributed by Janette C. Carlsen, The Johns Hopkins Hospital, Baltimore; Clara Karl Frederick, Lombard, Illinois; Margene A. Wagstaff, Elmhurst, Illinois; the following dietetic interns from the VA Center, Los Angeles: Nancy Alcorn, Georgina Chang, Cynthia Danielson, Viola Hardin, Kristin Holmberg, Nadyne Rhinelander, Mary Lee Verderaime, and Patricia Wallace; the following dietetic interns from the VA Hospital, Houston: Janelle Brumbelow, June Davis, Sally Gilliland, and Janice Worley; the following dietetic interns from Charity Hospital, New Orleans: Fharlin Carrasquillo, Teresa R. Devillier, Carmen Fernandez; and Margaret Hambright; Dr. Frank E. Rice, Consultant in Nutrition Research, Evaporated Milk Association, Chicago; and the Journal staff.

THE AMERICAN JOURNAL OF GASTROENTEROLOGY

Vol. 35, June, 1961

*Common errors in nutrition. S. A. Tauber.—p. 585.

Common Errors in Nutrition: The errors in nutrition are divided into errors of commission and errors of omission. Those errors committed include: (a) A diet high in calories is prescribed for weight gain in a patient who has up to that point been taking only small amounts of food. In such cases, the author suggests increasing the caloric consumption by small increments over a period of time up to the caloric level desired. (b) Fad diets, such as the liquid formula for weight reduction, are condoned. The error is the failure to train the patient in proper eating habits during the therapeutic period. (c) Restricting liquids and salt intake during weight reduction. Another nutritional practice which may raise a philosophical question rather than be classified as a true error is the use of a dietary regimen which markedly alters the normal or usual pattern of the diet, such as fat-free or high unsaturated fat diets. Under errors of omission is listed the frequent provision of liquids for a long period of time which are inadequate for the post-operative patient. There is also the error of the physician's inability to take the time to instruct his patient on his diet or utilize the service of the hospital dietitian or the public health nutritionist for this purpose. In summary, the greatest error made in nutrition in medicine today is the failure to make the best use of it in the active treatment of disease.

THE AMERICAN JOURNAL OF MEDICINE

Vol. 30, June, 1961

*Body density, fat, and fat-free weight. T. P. K. Lim and U. C. Luft.—p. 825.

*Correlation of radioactive and chemical fecal fat determinations in the malabsorption syndrome. I. Studies in normal man and in functional disorders of the gastrointestinal tract. B. D. Pimparkar, E. G. Tulsky, M. H. Kalser, and H. L. Bockus.—p. 910.

*Correlation of radioactive and chemical fecal fat determinations in various malabsorption syndromes. II. Results in idiopathic steatorrhea and diseases of the pancreas. B. D. Pimparkar, E. G. Tulsky, M. H. Kalser, and H. L. Bockus.—p. 927.

Body Density, Fat, and Fat-Free Weight. Fat-free weight is the best single predictive variable for either basal metabolic rate or cardiac output. Analyses of other basic physiologic parameters, such as maximal oxygen uptake, blood volume, glomerular filtration rate, creatinine excretion and total body potassium, in relation to fat-free weight, surface area, and gross body weight have to be made to ascertain the validity of these standards of reference. At this stage of investigation, it is the opinion that fat-free weight is an important standard of reference and re-examination of basic physiologic variables on this basis may furnish a clearer insight into the dynamic processes of normal as well as abnormal functions of the human body. It is estimated that acute loss of body weight under severe stress at a rate of 1 kg. per day includes about 500 calories from the fat-free mass and 5000 calories from fat. Since such major changes in body constituents accompany drastic alterations in caloric requirements and also involve a considerable change in the quantity and composition of body fluids, it is obvious that quantitative data on body composition would be of aid in the effective treatment of such patients.

Fecal Fat Determination. Fecal balance studies, using standard chemical techniques and blood peak and fecal radioactivity determinations, were carried out after the administration of radioactive iodine-labeled triolein in twenty-four normal volunteers and thirteen patients with functional disorders of the gastrointestinal tract. The I^{131}-labeled triolein meal was administered in capsule as well as emulsion form. Fecal wet weight, dry weight, fat (chemical), and nitrogen were determined, as was the fecal radioactivity. Twenty voluntary subjects were given both the emulsion and capsule type of triolein meal. The blood absorptive curve after the emulsion meal was much more uniform, with a narrower range in values, whereas with the capsule meal variation was greater. There were no significant differences in the various fecal studies and the blood peak and fecal radioactivity values between the normal volunteer subjects and the patients with functional disorders, except in the values for fecal wet weight. Wet weight was significantly increased in patients with functional disorders, probably due to an increased amount of water, since the dry weight, (chemical) fat, and nitrogen values were nearly the same in both groups.

Further Fecal Fat Determinations. From these results it may be concluded that, in general, in each group of patients with abnormal fecal fat excretion as chemically determined, the fecal radioactivity determination was abnormal in about 85 per cent while the blood peak radioactivity was abnormal in 72 per cent. In those who had a normal fecal fat excretion by chemical methods, nearly 80 to 90 per cent had both blood and fecal radioactivity in the range of normal. These results suggest that the triolein test is likely to be normal in four-fifths of those who do not have steatorrhea, while its accuracy in the presence of steatorrhea is about two-thirds to three-fourths. If facilities of metabolic balance studies are not available, because of its simplicity, the triolein test (using both blood peak and fecal radioactivity determinations) may prove a useful substitute in detecting steatorrhea, provided its limitations are fully appreciated.

THE AMERICAN JOURNAL OF SURGERY

Vol. 101, June, 1961

*Peptic ulcer in pediatric practice. Its medical and surgical implications. R. H. Whittlesey.—p. 772.

Ulcers in Children. A study done in an urban community of 33,000 persons demonstrated fifty-five instances of peptic ulcer in children to age sixteen with no significant sex differences. The average age of the patient was eight years, nine months. The patients were treated by use of a bland diet, frequent administration of milk and cream, and use of anticholinergics and alkali. It was felt that a sounder healing and lower recurrence rate might have been obtained if the physicians paid more attention to the psychologic factors involved. The surgical treatment given has had inadequate clinical trial.

ANNALS OF BIOCHEMISTRY AND EXPERIMENTAL MEDICINE

Vol. 21, January, 1961

*The effect of replacing wheat in a poor Indian diet by a blend of whole wheat flour, tapioca flour and low-fat groundnut flour *(paushtic atta)* on the growth and nutritional status of children. V. Subrahmanyan, T. R. Doraiswamy, R. K. Bhagavan, R. Rajagopalan, P. P. Kurien, A. N. Sankaran, D. S. Bhatia, and M. Swaminathan.—p. 7.

*The effect of replacing wheat in a poor Indian diet by a blend of whole wheat flour, tapioca flour and low-fat groundnut flour *(paushtic atta)* on the metabolism of nitrogen, calcium and phosphorus in children. P. P. Kurien, S. V. Rao, T. R. Doraiswamy, R. Rajagopalan, M. Swaminathan, and V. Subrahmanyan.—p. 13.

*The supplementary value of coconut meal, groundnut meal, Bengal gram, low-cost protein food and skim milk powder to tapioca-rice diet. P. K. Tasker, K. Indira, M. N. Rao, K. Indiramma, M. Swaminathan, and V. Subrahmanyan.—p. 17.

Replacing Wheat in Diet and Growth of Children. The effect of replacing whole wheat flour in a poor Indian diet by *paushtic atta* (a blend of whole wheat flour, tapioca flour, and low-fat groundnut flour) on the growth, general health, and nutritional status of children was studied. No significant difference was observed in the increase in weight, height, red blood cell count, hemoglobin, and nutritional status between the control and experimental groups.

Replacing Dietary Wheat and Mineral Metabolism. The effect of replacing whole wheat flour, which formed 50 per cent of cereals in a poor Indian diet, by *paushtic atta* (a blend of whole wheat flour, tapioca flour, and low-fat groundnut [peanut] flour) on nitrogen, calcium, and phosphorus metabolism was studied in children. All subjects were in positive nitrogen balance, positive calcium balance, and positive phosphorus balance when fed *paushtic atta*. Production and consumption of *paushtic atta* in place of whole wheat flour will help considerably in making up the shortage of wheat, without affecting the nutritional status of the people.

Supplements to Tapioca-Rice Diet. The supplementary value of low-fat coconut meal, groundnut flour, Bengal gram flour, low-cost protein food (containing a blend of groundnut flour, Bengal flour, and coconut meal) and skim milk powder at 20 per cent level to a tapioca-rice diet was determined by the rat-growth method. All these supplements produced a marked improvement in the growth-promoting values of the tapioca-rice diet. Skim milk powder and low-cost protein food promoted significantly higher growth rate than the other supplements. All the protein foods were equally effective in maintaining the liver protein content, *and* the red blood cell count, and hemoglobin content at normal levels.

THE BRITISH JOURNAL OF NUTRITION

Vol. 15, No. 2, 1961

*Diet and serum cholesterol of lumberjacks. M. J. Karvonen, M. Pekkarinen, P. Metsälä, and Y. Rautanen.—p. 157.

*Height, weight and food intake in man. A. M. Thomson and W. Z. Billewicz.—p. 241.

Diet and Serum Cholesterol. The diet and the serum cholesterol level of lumberjacks actively engaged in forest work in Finland were investigated. The mean energy value of the daily diet was 4763 calories, 45 per cent of which was derived from fat. By comparison, the general local population obtained 35 per cent of its calories from fat. Of the 237 gm. fat consumed by the lumberjacks, 60 per cent was derived from milk and butter and 30 per cent from meat. Despite the unusually large intake of fat, the serum cholesterol of the lumberjacks was similar to that of other men in the local population. The mean rose from 246 to 274 mg. per 100 ml. between twenty and fifty-nine years of age. That the serum cholesterol level was no higher was probably due to a depression of the serum cholesterol content by heavy work. Nevertheless, a large proportion of the cholesterol values was in the range where the risk of atherosclerosis is thought to be increased.

Height, Weight, and Food Intake. Data derived from a study of pregnant women were used to investigate relationships of height and weight to diet. In a group of 489 pregnant women, caloric intakes tended to increase with stature. The increase of consumption could not be explained by the associated increase of body weight. Intakes of most nutrients increased with stature and paralleled caloric intakes. The increases in calcium and ascorbic acid intakes were larger than could be accounted for by the associated rise in caloric intakes. Caloric intakes rose also with increasing body weight, but the rise was much smaller than expected from the FAO schedule of caloric requirements. The taller and heavier women were, on average, superior in social status to the smaller and lighter women. The caloric intakes of overweight and underweight women were closely similar. This implies that the relatively obese must have been less active. It is suggested that schedules of caloric requirements, which have been based mainly on laboratory studies of energy expenditure, need to be reviewed.

BRITISH MEDICAL JOURNAL

No. 5237, May 20, 1961

*Teats. R. Graham.—p. 1453.

No. 5238, May 27, 1961

*Cardiovascular complications of diabetes mellitus. N. S. Pathania and R. S. Sachar.—p. 1505.

No. 5239, June 3, 1961

*Shortage of dietitians. Annotations.—p. 1597.

Nipples Used in Infant Feeding. The type of nipple used is of importance in bottle-feeding. Guidance should come from the medical advisor, if necessary after observing a feeding, rather than be left to sales persuasion. A good nipple should not absorb excessive amounts of water, should be resilient, should have a medium-sized hole which can be enlarged as the rubber deteriorates, and there should be no attachments in the form of anticolic valves, rimes, or flanges. Dry sterilization of nipples preserves the rubber longer than wet procedures. Hypochlorite solution causes less deterioration than boiling. Illustrations of eleven types of nipples available in Great Britain show much different styling than those available in the U. S. The design of the nipples is similar to that used in the country in the early twenties.

Cardiovascular Complications of Diabetes. An analysis of cardiovascular complications in 349 diabetic persons is presented. An incidence of 21.7 per cent for coronary disease, 27.8 per cent for hypertension, 5.7 per cent for cerebral vascular lesions, and 5.7 per cent for diabetic nephropathy was found. The male-to-female sex ratios were 1.7:1, 1.2:1, 1.3:1, and 1.3:1 respectively. The lower incidence of these complications as compared with most of the published reports is pointed out. The significance, in view of the lack of treatment in the vast majority of diabetics, in the present series is discussed. Differences in relation to sex incidence are compared with previous observations. It is difficult to support the widely held view that coronary heart disease occurs at an earlier age in diabetics.

Shortage of Dietitians. Dietitians are necessary members of the staff of general hospitals if patients are to benefit from current knowledge of nutrition in health and disease. Unfortunately, only a minority of hospitals in Great Britain are able to provide skilled dietetic services for their patients because the number of dietitians now working and training in hospitals is woefully inadequate. Authoritative estimates of the numbers necessary in British hospitals, based either on numbers of beds or on the population of patients likely to need dietary treatment, have varied between 500 and 1500, while more recently a figure of 700 has been suggested. In 1959, only 279 full- or part-time dietitians were reported to be working in hospitals in England and Wales. Because of this unsatisfactory number, the Catering and Diet Committee of King Edward's Hospital Fund, began in 1957 to inquire into the present position of diet therapy in hospitals, the work done by dietitians within the hospital service, and the reasons for, and effects, of the acute shortage of dietitians. The committee found that young people leaving school were not attracted to dietetics for it requires a high academic standard and a long and expensive course, after which the financial rewards and conditions of service in hospitals are comparatively poor. Matters are worsened by the often lukewarm support and interest from medical, nursing, and catering staffs and by the poor kitchen and office accommodation provided in many hospitals. Recommendations by the committee for improving conditions and recruitment include a shortening and replanning of the training course to a three-year period, which should be followed by a compulsory year's internship in a hospital dietetic department immediately preceding registration. The standard of a nationally accepted certificate or diploma should be supervised by the British Dietetic Association and State registration of all dietitians enforced.

Recruitment would be encouraged if working conditions, professional status, accommodation in hospital, and salary scales were improved. A combined effort by the British Dietetic Association, the medical profession, and the Ministry of Health will be needed to overcome the present acute shortage of dietitians.

CANADIAN JOURNAL OF PUBLIC HEALTH

Vol. 52, June, 1961

*The effects of cobalt-60 radiation on *Trichinella spiralis* in meat. M. H. C. Gibbs, K. F. MacQueen, and J. W. Pullin.—p. 232.

Cobalt-60 Irradiation on *Trichinella spiralis*. The dosage range for satisfactory control of trichinae in meat is considered to be 20,000 to 30,000 rad. This dosage of cobalt-60, while effective in completely inhibiting maturation of trichinae, is well below the level which produces deleterious changes in meat. The irradiation of pork with gamma rays appears to offer an effective means of control for trichinosis in human beings.

CEREAL CHEMISTRY

Vol. 38, May, 1961

*Flavor of bread and pastry upon addition of maltol, isomaltol, and galactosylisomaltol. J. E. Hodge and H. A. Moser.—p. 221.

Flavor of Bread with Maltol. Maltol and isomaltol are volatile, crystalline, enolic compounds that have been isolated in trace amounts from baked cereals and breads. Taste panel results show that maltol and isomaltol give similar caramel-like flavors, sometimes described as fruity. When each is incorporated in yeast rolls at 0.1 per cent of the flour weight, flavor difference in breads is frequently detected. The flavor is described as similar to that of the control fresh bread, only stronger. Galactosylisomaltol, prepared from milk sugar, has a bitter taste. Pie crust containing galactosylisomaltol before baking was preferred by tasters over the control.

CIRCULATION

Vol. 23, June, 1961

*Serum cholesterol and atherosclerosis in man. K. S. Mathur, N. L. Patney, V. Kumar, and R. D. Sharma.—p. 847.

Serum Cholesterol and Atherosclerosis. Two hundred cases were selected from medicolegal autopsies for a study of the relationship of serum cholesterol to the amount and severity of atherosclerosis in the aorta and the coronary and cerebral arteries. A preliminary study of cholesterol before and after death in twenty cases showed a close parallel between the two when the sample of blood was taken within 16 hr. of death. The mean serum total cholesterol tended to rise from 122 mg. per 100 ml. ±16 in the first decade to 176 mg. per 100 ml. ±28 in the fifth decade. No correlation was observed between the serum cholesterol level and the amount and severity of atherosclerosis in the arteries. When all the cases were divided into arbitrary groups according to the amount of atherosclerosis, a rise in the levels of mean serum total cholesterol was seen in the first six successive groups of aortic atherosclerosis. However, when age was excluded from the correlation between atherosclerosis and serum cholesterol, the interrelationship between the two was statistically insignificant.

FOOD TECHNOLOGY

Vol. 15, June, 1961

*Effect of freezing and frozen storage on the freshness and firmness of Danish pastry. K. Kulp and W. G. Bechtel.—p. 273.

*Vitamin stability in fortified potato flakes. J. Cording, Jr., R. K. Eskew, G. J. Salinard, and J. F. Sullivan.—p. 279.

*Occurrence of enterococci and coliform organisms on fresh and stored poultry.—W. B. Wilkerson, J. C. Ayres, and A. A. Kraft.—p. 286.

*Tenderness of poultry meat. I. Effect of anesthesia, cooking, and irradiation. W. J. Stadelman and R. G. Wise.—p. 292.

Frozen Storage of Danish Pastry. The effect of freezing and frozen storage on the freshness and firmness of Danish pastry, the richest of the yeast-raised bakery foods with a high content of sugar, shortening, and eggs, was studied. Freezing and defrosting caused no appreciable loss of freshness, and Danish pastry did not appear to be sensitive to limited variation in rate of freezing or defrosting. In this respect, it resembled cake rather than the leaner types of yeast-raised rolls, such as dinner rolls. At storage above 0°F., Danish pastry staled and firmed rapidly. At 0°F., the product was protected from staling and firming for at least eight weeks. Lower temperature offered no additional advantage. It is inadvisable to store unpackaged Danish pastries for more than a short time. Moisture losses during defrosting are great enough that the product should be protected during this process.

Vitamins in Fortified Potato Flakes. In the flake process, retention of both natural and added ascorbic acid during processing is 71 to 73 per cent. On storage in an air pack, flakes retained 70 to 76 per cent of the natural and added ascorbic acid remaining after processing. In a nitrogen pack, substantially all of the ascorbic acid that survived processing was retained after twenty-eight weeks' storage. Thiamine fortification appears uneconomical because of processing losses due to the presence of sulfite. Based on retention, fortification with vitamin A, riboflavin, and niacin seems practical. A yellow color in the reconstituted flakes was attributed to riboflavin, but the degree of color was not considered undesirable. Flavor of some lots was considered worse than the standard and was attributed to the multi-vitamin combination of these lots.

Enterococci and Coliforms on Poultry. The occurrence of enterococci and coliform organisms on poultry in the plant and in storage at low temperatures was investigated. These microorganisms indicate fecal contamination. Higher counts of enterococci, coliforms, and total aerobes were recovered from live turkeys than from carcasses on the processing line. The greatest decrease followed immersion in the scald tank and after mechanical picking. Enterococci and coliforms appeared to be of equal value in indicating initial contamination of birds stored above freezing but, when measuring original contamination of birds stored below freezing, only the enterococci were of value. Ordinarily, the coliforms failed to survive freezing.

Tenderness of Poultry Meat. Several factors influencing tenderness of poultry meat are discussed. Shear values of breast meat are reported as affected by cooking before freezing, gamma irradiation, and anesthetization before slaughter. Cooking before freezing and gamma irradiation of adequately aged poultry have only minor effects, which appear to be non-additive. The use of nembutal as an anesthetizer (to reduce bruising in getting chickens onto the killing shackles) significantly extends the period of maximum toughness as determined by shear values of cooked breast muscle.

GASTROENTEROLOGY

Vol. 40, June, 1961

*Intestinal absorption of riboflavin by rat and hamster. R. P. Spencer and N. Zamcheck.—p. 794.

Riboflavin Absorption. The intestinal absorption of riboflavin *in vivo* and *in vitro* was studied in the rat and hamster. Previous studies and this study suggest that riboflavin crosses the intestinal wall by diffusion rather than by a specific phosphorylating process. However, riboflavin-containing co-enzymes are found in the intestinal wall, as well as riboflavin, which suggests that at least part of the vitamin is phosphorylated. The significance of the phosphorylating process in relation to riboflavin absorption is not fully known.

GERIATRICS

Vol. 16, May, 1961

*Meals on wheels: 1960. M. D. Keller and C. E. Smith.—p. 237.

Meals-on-Wheels. Meals-on-wheels program is a limited aspect of a total community organization for the provision of services to increase the independence of the aged and infirm, allowing them to live successfully in their own homes, preventing their deterioration, and supplying a basic aspect of home care. Meals-on-wheels are among the newest services available for the homebound in the U.S. This program comes from a variety of voluntary and citizens' groups. Eligibility of the recipients is generally based on age, economic need, and inability to prepare adequate meals for themselves. The meals are planned by nutritionists or dietitians. Attention is given to the general

principles of geriatric nutrition, local food habits, and food availability. Food preparation is usually done in the kitchens of community agencies, clubs, or local restaurants. All programs serve at least one main meal a day. Volunteers participate in the delivery of the meals. The degree of supervision of food preparation and menu planning, the mode of delivery, the cost, and the method of packing the foods varies from one program to another.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 176, June 10, 1961

*Vitamins: charms or nutrients. Editorials. C. S. Davidson.—p. 868.

Vol. 176, June 17, 1961

*Colic. Questions and Answers.—p. 967.

Vol. 176, June 24, 1961

*Radioactive strontium. Foreign Mail–United Kingdom.—p. 1051.

*"Diabetic" and "dietetic" ice creams. Miscellany.—p. 1058.

*Fluoridated water. Questions and Answers. —p. 1062.

Vol. 176, July 1, 1961

*Determination of total body fat. Editorials. —p. 1108.

*Fluorine prophylaxis. Questions and Answers.—p. 1135.

*Anorexia. Questions and Answers.—p. 1136.

Vitamins. In this editorial it is pointed out that a physician must clearly distinguish between "charms" and the truths of scientific medicine in the administration of vitamins. He must not delude himself into believing that jangled nerves, malaise, depression, anemia, and other often-hard-to-explain symptoms are necessarily due to vitamin deficiencies. He not only must study his patient carefully, but also must learn to know the true nature and effectiveness of vitamins. He is then in a position to advise and treat his patients effectively. If he should choose to take advantage of the health superstitions of these charms and use vitamins for their placebo effect, he has made a positive decision and is not deluding himself.

Colic. Many reports suggest that certain foods in the maternal diet may cause some breast-fed infants to be colicky. A syndrome of colic and gastrointestinal bleeding has been described in infants, due to allergy to cow's milk. Some evidence suggests that maternal hypersensitivity to specific proteins may be passively transferred to the fetus, causing transient symptoms of hypersensitivity, including colic, in early infancy. Immaturity of the gastrointestinal tract has been proposed as a cause of poorly coordinated peristaltic activity, transient distention, or temporary obstruction. Parental tension is commonly associated with colicky infants, though it is often not clear whether this parental anxiety is the cause or the result of the infant's difficulties. Other factors, such as hunger, poor feeding technique, and carbohydrate intolerance, may contribute to this syndrome.

Radioactive Strontium. The Radiological Laboratory of the Agricultural Research Council in Great Britain has been examining the amount of radioactive strontium ingested in the diet as a result of nuclear explosions. In the early part of 1959, the amount of strontium-90 in milk rose appreciably but diminished later in the year. The values at the middle and end of the year, averaged over the whole country, were 11.7 and 12.2 micromicrocuries per liter. These values were 50 per cent higher than in 1958, but were still 5 per cent of the maximal level permitted by the Medical Research Council. According to the report, the strontium-90 released into the atmosphere from nuclear explosions has already exerted its maximal effect and is slowly declining.

Diabetic and Dietetic Ice Creams. The Committee on Food and Nutrition has been authorized by the Council of the American Diabetes Association to present this summary on diabetic ice creams. A comparison of the food values of standard ice cream and so-called diabetic ice creams may often reveal that the differences are so small as to challenge the usefulness of the product. Small variations in portion size easily could eliminate any difference. Frequently the major difference in the standard and special formula ice creams will be in the substitution of an artificial sweetener for the sugar used in the standard. This is usually saccharin, sodium cyclamate, or sorbitol. The latter, through its conversion to fructose, is not without its own direct contribution to the caloric pool, and its intake in excess of about 40 gm. daily may result in gastrointestinal disturbances. The Committee expressed its disapproval of advertising these products as being especially made for diabetic subjects or those on a restricted sugar diet without, at the same time, taking the rest of the diet into consideration.

Fluoridated Water and Dermatitis. While it is true that most substances known to man are potential allergens, there is no documented evidence to indicate that fluoridated water, either by contact or through ingestion, will produce an allergic response except in rare instances. Even in such cases, it has been impossible to exclude the possibility that other substances in the water are the responsible agents. There is no reliable evidence that 1 p.p.m. fluorine in water will produce any ill effects in humans.

Determination of Body Fat. A method is described in which total body fat is determined by absorption of an inert gas, cyclopropane, in a closed circuit. In a group of normal to moderately obese subjects, body fat averaged 15.4 kg., about 12 per cent lower than the fat values for the same subjects calculated indirectly from total body water. It appears that the gas absorption procedure and calculation possibly lead to an underestimation of total body fat. By subtraction of measured total body fat from body weight, values may be derived for fat-free lean mass (FFLM). The authors conclude that further knowledge is required of the distribution and nature of blood supply to adipose tissues and of accurate diffusion constants of gases in living tissues, before more exact mathematical description and extrapolation becomes possible. By the gas absorption technique, fat can be measured directly and independently of the size or condition of the FFLM.

Fluorine Prophylaxis. The use of fluoride tablets for the prevention of dental caries in young children in areas where the water is not fluoridated is a sound procedure, but the need for controlling the dosage and for preventing the careless use of such a drug is obvious.

Anorexia. The usual dose of insulin in the treatment of anorexia is between 10 and 20 units given subcutaneously 1 to 2 hr. before meals. The size of the dose and the timing of the injection should be adjusted according to the individual's response. At present, injections of insulin are rarely prescribed for this purpose because 0.5 gm. tolbutamide given by mouth 2 hr. before a meal usually produces the desired hypoglycemia.

THE JOURNAL OF CLINICAL INVESTIGATION

Vol. 40, May, 1961

*The serum lipids in men receiving high cholesterol and cholesterol-free diets. W. E. Connor, R. E. Hodges, and R. E. Bleiler. —p. 894.

Dietary Control and the Serum Lipids in Men. Six healthy men consumed in sequence: a cholesterol-free diet, a diet containing cholesterol from egg yolk, a cholesterol-free diet, and a diet with added crystalline cholesterol. These diets were identical in calories, fat, protein, carbohydrate, minerals, and vitamins. The fatty acid composition of the fat was also equivalent for all diets. The addition of dietary cholesterol in the form of egg yolk caused a significant increase in the concentration of serum cholesterol and phospholipid. The serum cholesterol and phospholipid decreased greatly when egg yolk cholesterol was removed from the diet. Amounts of dietary cholesterol from 475 to 1425 mg. per day (two to six egg yolks) produced similar effects. These amounts are within the average range of cholesterol consumption in the U.S. When crystalline cholesterol was added to the cholesterol-free diet, less striking but significant increases in the serum cholesterol and phospholipid occurred. These studies suggest that dietary cholesterol has a significant effect on human serum cholesterol concentration.

JOURNAL OF FOOD SCIENCE (formerly Food Research)

Vol. 26, May-June, 1961

*Production of irradiation odors from beef

protein fractions and their derivatives. P. A. Hedin, G. W. Kurtz, and R. B. Koch. —p. 212.

*Studies on frozen fish. I. Denaturation of proteins. P. L. Sawant and N. G. Magar.—p. 253.

Irradiation Odors of Beef Protein Fractions. This report contains information on some odors produced by gamma irradiation of several beef protein fractions and their derivatives. The odor was shown to vary with protein class, with molecular weight and electric charge, with the medium, and with the availability of functional groups. The unorthodox physical and chemical responses of an odor characterized as a "wet dog" odor are contrasted with those of a "wet chicken feather" odor. Of chief significance is the large variety of irradiated odors that can be produced from a single starting material as conditions are varied.

Denaturation of Fish Proteins. The effect of frozen storage and different glazes on the denaturation of fish proteins was studied. The solubility of proteins was affected less when glazes were used. The denaturation of proteins was restricted to the actomyosin fraction of proteins; the sarcoplasmic fraction remained unchanged. The total actomyosin denaturation was not closely related with either the decrease in apyrase activity of the muscle brei or with the contractility of the muscle.

JOURNAL OF DAIRY SCIENCE

Vol. 44, April, 1961

*Synthesis of milk fat in the bovine mammary gland. J. R. Luick.—p. 652.

*Effect of some environmental factors on the milk fat and solids-not-fat content of cow's milk. K. R. Johnson, D. L. Fourt, R. A. Hibbs, and R. H. Ross.—p. 658.

Vol. 44, May, 1961

*Antibiotics in milk–A review. J. L. Albright, S. L. Tuckey, and G. T. Woods.—p. 779.

*Comparison of flavor and some chemical properties of instantized and noninstantized nonfat dry milk. J. B. Mann and J. M. McIntire.—p. 851.

Vol. 28, June, 1961

*The effect of hydrogen peroxidase on the nutritive value of milk. M. E. Gregory, K. M. Henry, S. K. Kon, J. W. G. Porter, S. Y. Thompson, and M. I. W. Benjamin. —p. 177.

Fat Synthesis in the Bovine Mammary Gland. C^{14}-labeled glycerol, glucose, acetate, propionate, and butyrate were infused into one or two quarters of lactating cows and the milk fat produced compared with that obtained from uninfused quarters to determine whether such metabolites are used directly by mammary tissue. The labeled glycerol appeared in milk fat from the infused quarters and in the identical carbon position. Labeled glucose when infused appeared also as labeled glycerol, but there was no evidence that infused butyrate, propionate, or acetate was used in producing the glycerol moiety of milk fat. The author feels these results indicate that one pathway of milk fat formation involves in *de novo* synthesis in the mammary gland from pools of free fatty acids and glycerol.

Environment and Composition of Cow's Milk. Milk fat (MF) and solids-not-fat (SNF) were determined in composite samples of milk from herds consisting of 243 Holsteins and 276 Jerseys during the first 305 days of lactation. From the beginning of lactation, there were declines in MF and SNF to the second or third month in both breeds, then the percentages increased in general as the stage of lactation progressed. The calendar month of the year, as well as stage of lactation, affected the composition of the milks. Both breeds showed the lowest SNF in April; the cause could not be explained by differences in rations or environmental temperature. Age of animals (numbers of lactations) produced a gradual but irregular decrease in MF and SNF in both breeds. Averages of all analyses for all periods, together with lowest and highest, were: Holsteins—3.46 per cent MF (3.26 and 3.82) and 8.59 per cent SNF (8.37 and 8.98); Jerseys—5.43 per cent MF (5.04 and 5.93) and 9.61 per cent SNF (9.26 and 9.81).

Antibiotics in Milk. In this review of the literature (with 210 references), factors affecting the persistence of antibiotics in milk following the medical treatment of the cow are discussed, as well as the effect of heat and storage of the milk.

Flavor of Nonfat Dry Milks. Carefully controlled flavor acceptability tests revealed no differences between instantized and noninstantized nonfat dry milk, either initially or after storage. A number of chemical and physical tests applied to the two types of milk showed significant differences, but there was no correlation between these tests and flavor.

Hydrogen Peroxide-Treated Milk. In certain countries where highly developed milk handling systems are nonexistant, hydrogen peroxide has been used to preserve milk until it can reach a processing plant. A concentration of 0.05 per cent hydrogen peroxide in milk, held at 24°C. (75°F.) for 8 hr., reduced the bacterial count materially but did not affect vitamin content. There was a slight loss in protein nutritive value, apparently due to a reduction in total and "available" methionine. The authors conclude that there is no reason why such treatment of milk should not be used in tropical countries to insure that it reaches the processing plant in good condition, but that such treatment cannot be relied on to replace pasteurization.

THE JOURNAL OF LABORATORY AND CLINICAL MEDICINE

Vol. 57, June, 1961

*Influence of altitude changes on intestinal iron absorption. C. Reynafarje and J. Ramos. —p. 848.

*Urinary calculi in rats on milk or lactose diet. C. W. Vermeulen, D. L. Proctor, and L. Seibutis.—p. 883.

Iron Absorption. Intestinal iron absorption studies were carried out on eighty-four patients in Peru during changes of altitude. The absorption of iron was essentially the same in natives from high altitude as in sea-level subjects when each group was studied in his locality. These findings suggest that a greater or smaller bone marrow demand associated with changing red cell production is the stimulus for the intestinal absorption of iron related to altitude changes rather than oxygen saturation of the blood or oxygen tension at the intestinal level.

Dietary Influences on Urinary Stones. A milk diet augments stone formation in rats when a standard stimulus to stone growth is placed in the urinary bladder. Likewise, a diet containing lactose increases the concentration of urinary calcium, yet the marked stone growth in the animals on milk diet was not duplicated in this study. It appears that an unknown calculogenic factor is present in milk.

THE JOURNAL OF NUTRITION

Vol. 74, June, 1961

*Studies on the availability of amino acids. I. Effect of alcohol treatment of corn gluten. H. J. H. deMuelenaere, M. L. Chen, and A. E. Harper.—p. 125.

*Amino acid balance and imbalance. VII. Effects of dietary additions of amino acids on food intake and blood urea concentration of rats fed low-protein diets containing fibrin. U. S. Kumta and A. E. Harper.—p. 139.

*Influence of diet on serum cholesterol in the chick. J. E. Marion, H. M. Edwards, Jr., and J. C. Driggers.—p. 171.

Amino Acids and Corn Gluten. An *in vitro* enzymatic digestion study of untreated corn gluten and "reconstituted" corn gluten (containing isolated zein) revealed that corn gluten containing native zein was digested faster than the "reconstituted" product. Quantities of amino acids liberated after pepsin-pancreatin digestion were small compared with the quantities microbiologically available. In an *in vivo* study, the ingested nitrogen disappeared more rapidly from the stomachs and intestines of animals fed the untreated corn gluten. The values for availability of the threonine and valine in the "reconstituted" product were lower than those for untreated corn gluten. Those for isoleucine and lysine availability were not lowered by the treatment.

Amino Acid Imbalance. Studies were carried out to determine whether metabolic or physiologic effect occurred in rats within a short time after eating a diet imbalanced in amino acids. Food intake was depressed and blood urea concentration increased when there was an imbalance of amino acids that caused a growth depression. Insulin had an appetite-stimulating effect when added to an amino acid imbalance.

Serum Cholesterol in Chicks. Variations in dietary protein, energy, and cholesterol failed to influence serum cholesterol levels in growing chicks when fed a diet very low in fat. Increases of serum cholesterol were obtained by the addition of corn oil to a

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diet containing cholesterol. An inverse relationship between dietary protein and serum cholesterol was noted only when corn oil was present. This was pronounced when cholesterol was incorporated in a corn oil supplemented diet. Growth responses were observed when corn oil was added isocalorically to the low-fat diet, indicating that the chicks fed the low-fat diet may have developed a fatty acid deficiency. Greater growth response to the addition of corn oil occurred with diets low in protein, suggesting that dietary protein may influence fatty acid deficiency.

THE JOURNAL OF PEDIATRICS

Vol. 58, June, 1961

*Growth and development of children with galactosemia. G. N. Donnell, M. Collado, and R. Koch.—p. 836.

*Acute infantile beriberi. D. H. S. Reid.—p. 858.

Development of Children with Galactosemia. Sixteen families with fifteen living galactosemic children were studied. The physical growth patterns of all but three of the children were within normal limits. The intellectual abilities of the parents were normal. All but one of the siblings were also normal. By contrast, four of the galactosemic children were mentally defective and one is in a state hospital for retarded children. Six others had borderline intelligence and six were in the low normal to normal range. Only three had an intelligence quotient of over 100. Late inauguration of dietary management was associated with a greater incidence and severity of mental handicaps. Adherence to a strict galactose-free diet is suggested. It is also recommended that soya products be avoided until additional knowledge is available.

Acute Infantile Beriberi. Four cases of acute infantile beriberi with similar clinical features are presented. The infants were breast fed, well nourished, and from six to twelve weeks of age. Premonitory symptoms were inconspicuous, and the acute illness occurred suddenly in a previously apparently well child. The features of the acute attack were coma, dyspnea, and cyanosis. The dyspnea was distinctive with a curious expiratory grunt. Treatment consisted of the cessation of breast feeding until thiamine had been given to the mother, and the administration of thiamine, oxygen, and an antibiotic to the infant. Recovery was dramatic, taking place within a few hours. The disappearance of this condition in Gurkha infants in Hong Kong with the use of thiamine prophylactically is mentioned.

MEDICAL CLINICS OF NORTH AMERICA

Vol. 45, May, 1961

*Studies of purine metabolism in neoplastic diseases. I. H. Krakoff, M. E. Balis, J. W. Magill, and D. Nary.—p. 521.

*Plasma protein abnormalities in cancer. M. L. Petermann.—p. 537.

Uric Acid Excretion in Neoplastic Diseases. Deranged purine metabolism is a common finding in leukemias, lymphomas, and in rapidly proliferating cancers. Abrupt lysis of tumor or leukemic tissue can result in excretion of increased amounts of uric acid. Chemical and physical agents capable of reducing leukocyte mass may be classified as those which destroy cells, e.g., x-rays, steroids, and polyfunctioning alkylating agents, and those which inhibit cell growth by blocking biosynthetic pathways, e.g., 6-mercaptopurine and amethopterin. Secondary gouty arthritis as a result of hyperuricemia associated with the leukemias can cause uric acid nephropathy.

Plasma Protein Abnormalities in Cancer. At the Sloan Kettering Institute for Cancer Research, studies were conducted to determine qualitative abnormalities in the plasma proteins of patients with cancer. The reasons for these studies are: first, the hope of finding useful diagnostic tests; second, the need for objective criteria for evaluating tumor therapy; and third, the need for better understanding of the systemic effects on the host. Methods used for the study of plasma proteins were: electrophoretic and ultracentrifugal analysis and chromatography, chemical fractionation, and immunological techniques. In spite of extensive searching, few qualitative abnormalities in plasma protein in cancer patients were found. Only proteins made in malignant cells can show qualitative abnormalities, and the possibility of a tumor causing qualitative changes in the proteins made in other cells is exceedingly remote.

METABOLISM

Vol. 10, May, 1961

*Changes in carbohydrate metabolism during blood loss shock and anoxia. W. L. Bloom and J. A. Ward.—p. 379.

Glycogenolysis in Blood Loss Shock and Anoxia. This study has confirmed many of the previous findings concerning blood sugar, lactic acid, and liver glycogen changes in rats subjected to blood loss. Glycogen changes during blood loss were most pronounced in the liver, in which there was a rapid decrease during blood loss but no change with anoxia. Cardiac and leg muscle glycogen changed little during blood loss in the fasted rat, whereas the acid-soluble glycogen increased in the fed rat. The changes in tissue glycogen, blood sugar, and lactic acid in adrenalectomized rats were no different from those of intact rats subjected to blood loss. In view of the difference in hepatic glycogenolysis observed in blood loss and anoxia, the change in cellular physiology in anoxia is concluded to be different from that of ischemia, despite similarities of blood changes in the two conditions. Anoxia is only one phase of the disturbance at the cellular level when circulation fails. The important role of alterations in hepatic metabolism in shock is reemphasized.

NEW ENGLAND JOURNAL OF MEDICINE

Vol. 264, May 11, 1961

*Urinary 17-ketosteroid and 17-ketogenic steroid excretion in obese patients. B. Simkin.—p. 974.

*Sip and grow thin. Editorial.—p. 1000.

Urinary Steroids in Obesity. Urinary steroid determinations in sixty-two obese patients and a control group of thirty healthy persons of normal weight revealed that the mean 24-hr. urinary excretions of 17-ketosteroids and 17-ketogenic steroids were significantly greater in obese persons. Several mechanisms for a possible relation between this steroid excretion and body weight are discussed. The clinical picture consistent with mild hyperadrenocorticism found in a number of the obese patients suggests that the increased urinary steroid excretion of these patients was of more than laboratory interest.

Sip and Grow Thin. When analyzed, most of the 900-calorie food concentrates are nutritionally balanced. Although they provide the recommended daily allowance for protein, they do not provide enough calories to keep the body from burning protein for energy. The average time that a person stays on the strict diet is two days, after which he either supplements the diet with regular meals or substitutes his own flavoring, usually chocolate and/or butterscotch. Having gone without food for two or more days, the person then eats as much or more than normally and weight is regained rapidly. It has been shown that periods of rapid weight gain are frequently accompanied by an appreciable rise in serum cholesterol. Thus people who take off pounds rapidly and just as rapidly put them back on, may be harming their vascular systems. The Food and Drug Administration has taken action against some of the products for false advertising. The fact remains that the only way to deal successfully with the problem of overweight is to eat less, get a wide variety of food, and exercise more.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 61, May 15, 1961

On classifying diabetes mellitus. I. Graef.—p. 1734.

Hypocholesterolemic action of nicotinic acid. J. L. Gaylor.—p. 1739.

Vol. 61, June 1, 1961

*Body fatness in normal young women. C. M. Young.—p. 1928.

Body Fatness in Normal Young Women. The percentage of body weight as fat in ninety-four young women, ages eighteen to twenty-eight years (mean age, 20.3 years), ranged from 15.81 to 38.62 with a mean of 28.69 ± 4.856. The young women appeared to be typical of a more or less average weight, middle-class or upper middle-class population. On the average, they had over two and a half times the percentage of their body as fat as do young men of comparable age and status; the figures for young

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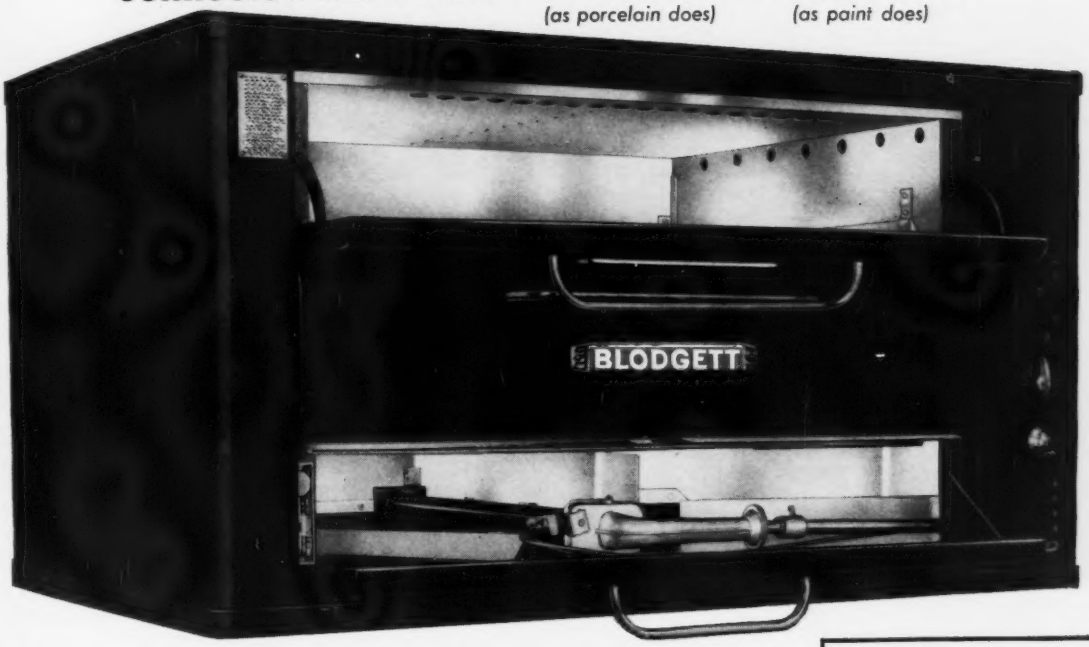

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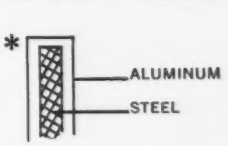

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women are slightly higher than those for middle-aged men and similar to those reported for elderly men. At least for young women, in the absence of facilities to make density measurements, the very simple technique of skinfold thicknesses measured with a calibrated caliper in well chosen spots would seem to give a better indication of relative fatness than the other more elaborate chemical procedures used.

NUTRITION ABSTRACTS AND REVIEWS

Vol. 31, April, 1961

*Pyridoxine: Metabolism and requirement. I. Leitch and A. Hepburn.—p. 389.

Pyridoxine. Much work has already been done on pyridoxine chemistry, enzymology, and deficiency; less on requirement and still less on physiology. This paper is concerned with the metabolism and requirement of pyridoxine. There are obvious questions about the metabolism of this vitamin to which there is no answer. Published estimates of the amount of vitamin B_6 provided by diets vary between 1.5 and 1.85 mg. in amounts of food of energy value between 2450 and 3000 kcal. Calculations based on the most recent estimates of composition of foods give higher values, of the order of 2.3 mg. for 2600 kcal. Reasons are given for the view that the requirement of vitamin B_6, like that of thiamine and riboflavin, is related to the energy turnover. From a brief table of requirements of different species, it is suggested that the requirement lies between 0.45 and 0.6 mg. per 1000 kcal. for adults, and between 0.45 and 0.8 mg. for children. On those assumptions, the national diet would need to provide between 1.2 and 1.76 mg. per person daily.

NUTRITION REVIEWS

Vol. 19, July, 1961

*Heights and weights of adults in the United States. M. L. Hathaway.—p. 193.

Heights and Weights of Adults. Data available to USDA on height-weight relationships have been summarized in a new bulletin, *Home Economics Research Report No. 10.* Through the evaluation of published and unpublished height-weight data, an attempt was made to provide as adequate a description as possible of our present U. S. population. The report contains information on average heights and weights related to age, average weights for height and age, data on men in the military services, data from other countries compared with data from the U. S., and changes in the U. S. population between 1790 and 1950. Also included is an addendum presenting two tables from the *Build and Blood Pressure Study of 1959*, published by the Society of Actuaries in 1959, as this bulletin was ready to go to press.

PEDIATRICS

Vol. 27, May, 1961

*Dietary fat and concentrations of lipid in the serum during the first six to eight weeks of life. M. J. Sweeney, J. N. Etteldorf, W. T. Dobbins, B. Somervill, R. Fischer, and C. Ferrell.—p. 765.

Vol. 27, June, 1961

*Hypervitaminosis D. Effect of treatment with sodium sulfate. A. Kowarski, T. R. Shapiro, N. Biezunski, and C. Kowarski.—p. 1004.

Dietary Fat and Serum Lipid Concentration. Data seem to indicate that the atherosclerotic process begins early in life even though neither the fully developed vascular changes nor the major manifestations of this process ordinarily appear until middle age. This served as the major stimulus for initiation of this study which took six to eight weeks. The subjects were infants born out of wedlock, at St. Joseph Hospital, and housed at St. Peter's Orphanage, Memphis, Tennessee. The infants were placed in the study no later than five days after birth. Four diets were employed, with the infants divided in four groups. Diet I was derived entirely from animal sources, Diet II from non-animal sources, Diet III from both animal and non-animal sources, and Diet IV from both animal and non-animal sources but with a predominance of unsaturated fatty acids. Diet I resulted in the greatest concentration of total lipids and individual lipid fractions in serum. The amount of linoleic acid from Diets II, III, and IV, was twenty to thirty times greater than that supplied by Diet I. No significant differences were found in the lipid concentrations of the infants receiving Diets II, III, and IV. Because these results do not throw any conclusive light on the relationship between dietary fat and the pathogenesis and epidemiology of atherosclerosis, they do not justify dietary recommendations for infants, although they possibly show a means of keeping lipid concentration in serum low during infancy.

Treatment of Hypercalcemia with Sodium Sulphate. Vitamin D intoxication occurs more frequently in the treatment of rickets as the large therapeutic dose required in this disease borders the toxic dose. There is a wide range of individual susceptibility to vitamin D. While in some individuals, a very high dosage does not cause any adverse effects, in others, even a small dosage can cause toxic symptoms. Hypercalcemia is the fundamental problem in vitamin D intoxication as it is the direct cause of anorexia, hypotonicity, lethargy, constipation, metastatic calcifications, and in children, diarrhea and hypercalcification at the growing ends of the long bones. Some substances, such as ethylenediamine tetracetic acid and cortisone, have been used to remove calcium from the body and reduce hypercalcemia but they have been unsuccessful. Treatment with sodium sulphate by mouth was effective and safe in a case of vitamin D intoxication in a fifteen-month-old boy who suffered from rickets. With this treatment, the calcium concentration in serum decreased and the general condition of the child improved. The explanation for the mode of action of the sodium sulphate in treating hypercalcemia is that this substance interferes with calcium absorption in the intestine, by promoting the formation of the poorly absorbed calcium sulphate.

PUBLIC HEALTH REPORTS

Vol. 76, June, 1961

*Current status of food poisoning control. L. Buchbinder.—p. 515.

*Cadmium poisoning from a refrigerator shelf used as an improvised barbecue grill. T. D. Baker and W. G. Hafner.—p. 543.

Food Poisoning Control. The apparent lack of progress of food poisoning control programs in the U. S. is indicated by a fairly constant number of outbreaks and cases reported annually. In comparison, milk and water control programs have been successful. Probably the most important difficulty in sanitary control relates to the nature of food processing and food serving operations. As a rule, terminal sterilization of foods cannot be or is not performed. Likewise, closed-processing systems have not or cannot be used. As a result, food which is frequently not entirely freed of contamination is also subjected to recontamination. Also, food preparation operations include numerous food products and processes and many locations with thousands of employees, a great number of whom are potential sources of food infection. The use of bacteriological testing of foods is not yet universally supported by the food industry and the public. The stimulus of public demand for more adequate food-protection services is largely lacking.

Cadmium Poisoning. A cadmium-plated refrigerator shelf which was used as a barbecue grill for the first time apparently caused cadmium poisoning in a family in Syracuse, N.Y. All four members of the family became ill shortly after eating steaks prepared on this device. Recovery was spontaneous and without sequelae. This experience emphasizes the ever-present danger of eating food which has in any way come in contact with cadmium utensils.

QUARTERLY BULLETIN OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

Vol. 35, Summer, 1961

*The effect of safflower oil upon serum lipids and proteins in juvenile diabetes mellitus. H. S. Traisman and A. L. Newcomb.—p. 143.

Safflower Oil and Juvenile Diabetic Patients. The effect of safflower oil on the serum lipids and proteins of juvenile diabetic patients was studied. There was a statistically significant lowering of serum lipids with safflower oil. Safflower oil provides 46 per cent essential fatty acid (linoleic acid) glyceride, and contains less than 5 per cent saturated fatty acid glyceride and less than 13 per cent oleic acid glyceride. It would seem that a diet rich in unsaturated fat would be a

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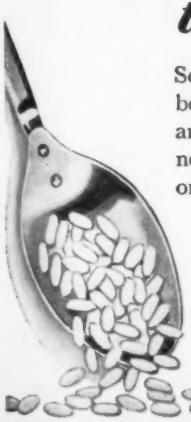

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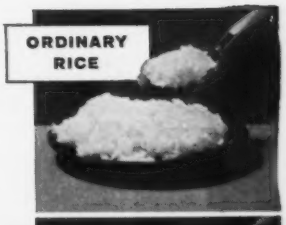

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ROYAL SOCIETY OF HEALTH JOURNAL

Vol. 81, May-June, 1961

*Food sampling: changing trends. H. A. Williams.—p. 138.

*The production of clean shellfish. P. C. Wood. p. 173.

Food Sampling. The purpose of food sampling is to prevent adulteration and contamination. This paper, written by a public analyst, is concerned with changing trends in food sampling in the London area during the past thirty-five years. The food supply is gradually but continually altering, due to the influence of changing customs, new developments, and many other factors. The adulteration, including contamination, deterioration, and misdescription, of food and drink also presents a constantly changing picture. This, in its turn, is influenced not only by changes in the character of the food but also by new legal requirements and official recommendations, new methods of processing, new additives and pesticides, and by new and improved methods of analysis.

Clean Shellfish. The discharge of sewage into the sea can cause considerable damage to commercial shellfisheries. Of the commercial species, the filter-feeding cockles, edible mussels, and oysters are usually affected. The factors influencing the pollution of shellfish and the methods available for its removal are discussed.

SCIENCE

Vol. 133, June 2, 1961

*Strontium-90 and cesium-137 in North American milk. J. L. Kulp, A. R. Schulert, and E. J. Hodges.—p. 1768.

Vol. 133, June 9, 1961

*Zinc-65 in marine organisms along the Oregon and Washington coasts. D. G. Watson, J. J. Davis, and W. C. Hanson.—p. 1826.

Vol. 133, June 16, 1961

*Estimation of total body fat from potassium-40 content. E. C. Anderson and W. H. Langham.—p. 1917.

Vol. 133, June 23, 1961

*Evaluation of the origins of strontium-90 contained in wheat plant. R. Ichikawa, M. Abe, and M. Eto.—p. 2017.

Vol. 133, June 30, 1961

*Protein malnutrition in young children. N. S. Scrimshaw and M. Béhar.—p. 2039.

Strontium and Cesium in North American Milk. The strontium-90 and cesium-137 concentrations in powdered milk in North America vary roughly with specific gravity of rain. The Sr 90:Cs 137 ratios in over eight hundred powdered milk samples taken from sixty stations in North America from 1957 to 1960 had a standard deviation of only 44 per cent.

Radiozinc in Marine Organisms. The concentrations of zinc-65 in marine animals and plants near the mouth of the Columbia River are presented. Radiozinc in the biota diminished rapidly with the distance from the river mouth. The highest levels were found in plankton, algae, and mollusks. Of the human foods, oysters exhibited the highest levels.

Total Body Fat. A new approach to the estimation of fat content in living man is presented, namely, the use of whole body potassium content as an index of lean body mass. The potassium is determined by measurement of the gamma-ray emission of potassium-40. A brief review is given of the development of methods used.

Strontium-90 in Wheat Plant. To evaluate the future strontium-90 hazard level, the argument concerning radioactive contamination of wheat and other cereals by fallout has been narrowed down to the problem of how much strontium-90 in grain depends on the cumulative strontium-90 deposition in soil and how much depends on the current fallout rate. Twenty per cent of the strontium-90 in wheat flour in 1959 was due to root absorption, 30 per cent to floral absorption from soil, and 50 per cent to current fallout. In 1960, 35 per cent was due to root absorption, 50 per cent to floral absorption from soil, and 15 per cent to current fallout. The strontium-90 content of wheat flour is assumed to maintain the level of the 1960 sample, unless the strontium-90 content in soil should change, due to leaching out, decrease of availability for plant, and so forth, because the present level of strontium-90 in wheat flour is mostly originating from soil contamination.

Protein Malnutrition. It is now evident that most deaths from protein malnutrition occur after weaning and that the mortality of children from one to four years old in a country is the best index of the seriousness of protein malnutrition. In the U. S. and most of Western Europe, the mortality of this age group is 1 per 1000, while in most technically underdeveloped countries, the proportion varies from 10 to 45 per 1000. In this article, Dr. Scrimshaw discusses the clinical characteristics, biochemistry, physiology, pathology, epidemiology, treatment, and prevention of protein malnutrition. The basic treatment of kwashiorkor is dietary. The child should be given a diet providing 3 to 5 gm. protein of good biologic value per kilogram of body weight per day.

SURGERY, GYNECOLOGY, AND OBSTETRICS

Vol. 112, June, 1961

*Use of diethylpropion combined with a supplement for safe and effective weight control in pregnancy. M. J. Jordan and G. M. Bader.—p. 663.

Weight Control in Pregnancy. A new appetite depressant, diethylpropion, and supplemental vitamins and minerals have been combined in one tablet. After clinical evaluation in a group of fifty gravid women, their value for safe and effective weight control in pregnancy was confirmed. There were no side reactions or allergic manifestations. Diethylpropion did not produce central nervous system stimulation, insomnia, or any significant change in the blood pressure or pulse rate.

CANADIAN FOOD JOURNAL

Vol. 2, January, 1961

*Are we know-it-alls in world feeding? L. B. Pett.—p. 11.

*What is a dietitian? D. Shantz.—p. 20.

*Beware of food faddism! C. Trerice.—p. 30.

Vol. 2, February, 1961

*In praise of fish. A. Francis.—p. 6.

*The delights of Italian cooking. J. Wechsberg.—p. 12.

*Sense of humor important, too, in a good executive. M. Ketchen.—p. 16.

*Another 100 years for Mrs. Beeton. H. A. Albert.—p. 18.

*They never missed a meal! M. Mulliette.—p. 27.

*Wining and dining diplomats. R. Karen—p. 30.

*Look what's happening to dehydrated food! E. C. Schurmacher.—p. 40.

Vol. 2, March, 1961

*Bread goes gourmet. C. Trerice.—p. 2.

*What you should know about diabetes. I. Lockerbie.—p. 12.

*The ubiquitous egg. M. Priestley.—p. 14.

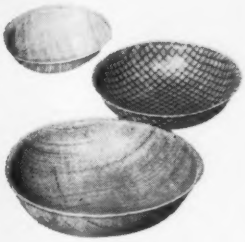
*Canada's meat watch dogs. A. Francis.—p. 22.

*Do you collect cookbooks? H. A. Albert.—p. 38.

World Feeding. We may disturb a valuable cultural adjustment by blind insistence that we know what is good for everybody in the world. The apparent nutritional needs of Japan, Indonesia, and India are reviewed. In all three countries, a variety of foods is being encouraged, especially an increase in the use of protein foods. In Japan, wheat, beans, sea food, and milk, in addition to rice, are the mainstays of the diet. Indonesians are rice eaters, but corn, cassava, and sweet potatoes are eaten, too; soy beans or other legumes and all other protein foods must be emphasized. Rice and wheat are the staples of diet in India. Here, near-self-sufficiency in food must be a national goal (persuasion, through a vast and practical extension service, to plant second crop beans and peas as sources of protein; and better crops, through water control and numerous fertilizer plants are indicated).

What Is a Dietitian? She is many things to many people—an administrator, a teacher, a researcher, a consultant. The more common facets of the dietitian's work are considered. Versatility within the field is related to the educational background which covers so many of the sciences and to natural aptitudes of the individual. Much is forgotten of the formal training received at the college level, but when the need arises, we find that the background of knowledge still exists and provides a basis for understanding many complex reactions which might otherwise be baffling. Since each member of the profession holds the reputation of the group in her own two hands, the individual image created must be one based not only on acquired talents of knowledge and experience, but also on innate qualities such as tolerance, patience, and humor.

Food Faddism. Food fads may do



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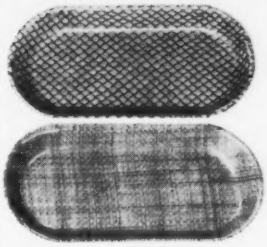

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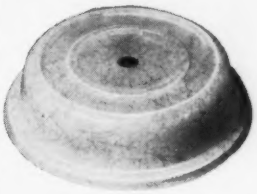

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little harm, either because they are followed for short periods of time or because they involve foods with some good nutritional properties—but they do cost money! Food fallacies can be harmful (common fallacies are cited). The operational procedure and characteristics of a pseudo-nutritionist are explained. Psychologic reasons for the success of food faddism are probed. Two main methods of attack on the problem are possible: (a) expanding our educational and information programs for the public through *practical* methods of application and demonstration and dealing directly with those who preach and peddle fad notions or products; and (b) training and educating children while their food habits are still being formed.

More Fish. The average Canadian eats only about 13½ lb. fish per year; in the U.S., consumption is about 17½ lb. per year—quite a contrast to Japan where the annual average is 90 lb. About 90 per cent of Canadian fresh water fish goes to New York, Chicago, and Detroit; 65 per cent of the salt water fish is also exported. The recipe testing activities of the Department of Fisheries and the work of the home economists "in the field" carrying on demonstrations are depicted.

Italian Cooking. The author, European correspondent of the *New Yorker*, relates meal-time in Italy to happiness and enjoyment. Descriptions of *pasta* (in its many shapes and forms), of local and regional *piatti* (specialties), of Italian sauces, cheeses, and regional wines provide atmosphere and give one a desire to visit the land of pleasurable dining.

Good Executive. An executive is like a symphony conductor, playing no instrument, but uniting all in a complete, harmonious performance. This work requires analytical and creative thinking, judgment, initiative, confidence, and vision. It also means that routine aspects of the department be delegated to others. Add to these skills a sense of humor and the practice of meditation and introspection and the result will be a good administrator.

British Cook Book. To the British, Bella Beeton was the Dr. Spock of her day. Encouraged by her husband, one hundred years ago she wrote *Mrs. Beeton's Book of Household Management*, chiefly a cook book but delving also into household matters as various as "the management of children" and methods of paying tax. By the turn of the century, over a million copies had been sold. Many pioneers brought the 1997-page volume across the Atlantic (collectors pay $85 for the first edition), and there have been many revisions. During World War II, all the publisher's records and a million books were destroyed by fire. Now, in 1961, a centenary edition is introduced. A large section of the 1344-page tome gives traditional foreign and Commonwealth recipes. Judges at the International Cookery Exhibition at Frankfurt awarded the book a silver medal.

Moving Day for Hospital Kitchen. Recently the Dietary Department of Toronto Western Hospital, serving 3500 meals per day, moved to a new and larger location within the hospital. The actual move took five days, though planning had gone on for months. Paper service was used for two weeks prior to the change, the baker went on night duty while the ovens were being transferred. There was no break in service at any time. The centralized system, the evaluation of equipment, the importance of the menu, and the participation of employees in making changes or extending services are the factors which spelled success.

Wining and Dining at the U.N. During the General Assembly, some 1500 meals are served each day to delegates from ninety-nine nations, and their guests. To handle the flow of global culinary traffic, an ex-detective from France has been assigned to assist in the diplomacy of the dining room. Since the number of meals and hours at which they are served depend on the schedule of the U.N., more than ordinary preparation and anticipation are required. International dishes are always available, but the unchallenged favorite is sirloin steak; runner-up is roast beef with Yorkshire pudding. The kitchen staff is international and operationally, it is a two-language kitchen: communication is in English but the frame of reference is French. Preferences of some of the delegates are told, and recipes are given for two specialties, paté maison U.N. and paté maison extraordinaire.

Dehydrated Food. The success of the freeze-drying process is still a surprise to many. It is a straightforward process: food is placed in a vacuum chamber at low atmospheric pressure and zero temperature; as much as 98 to 99 per cent of the moisture forms ice crystals immediately converting to vapor without passing through the intermediate liquid stage. The food, approximately one quarter of its original weight, is tightly sealed in a tin can or moisture-proof plastic or foil container. The advantages and future of the process are discussed.

Gourmet Bread. A new role for bread—ingredient "extraordinaire"—is recognized in such ideas as these: a toastwich (a sandwich served as French toast), egg in a pocket, tostada of beef (the tortilla idea for which a quantity recipe is included), and unusual stuffings for turkey, goose, chicken, lamb and pork chops, salmon steaks, halibut, whitefish, pike, zucchini, green pepper, and eggplant.

Facts about Diabetes. Incidence and current methods of treating diabetes are outlined. Explanations of cause and treatment (involving insulin and oral-diabetic tablets, diet, and exercise) are in terms easily understood by the lay public.

The Ubiquitous Egg. The egg and its manner of preparation can be the subject of debate and conversation almost unendingly. The French have charted 685 ways of cooking it. Egg customs are known, dating back to the ancient Persians; the Romans were reputely the first to create the egg nog (mixing it with wine). Penguin, turtle-dove, plover, ostrich, and many other types of eggs enter the gourmet picture. Decorated eggs, such as the jewelled egg in the Papal collection, are works of art. These facts and many comments on skill of preparation are brought out.

Meat Watch Dogs. Over 80 per cent of the meat eaten in Canada is from animals which cross international or provincial borders—thus coming under the jurisdiction of the Health of Animals Division of the Department of Agriculture. Over the years, rindpest, the scourge of African herds, has been successfully kept out, foot-and-mouth disease is under control, as is hog cholera (cost of control is 1 cent per hog marketed, compared to $1 per hog marketed in the U. S.). Bovine tuberculosis has been reduced to 0.1 per cent. Other activities of the federal watch dogs, including testing of meat wrappings, are mentioned.

Cook Book Fans. Food professionals are the real cook book fans, and currently there is a bumper crop of attractive publications. For instance, *French Provincial Cookery* by Elizabeth David presents the know-how of the greatest culinary district in the world and includes an index of the towns mentioned in the text. *The Art of Simple French Cookery* by Alexander Watt is a professional exploration of the smaller restaurants of Paris and also includes simple recipes that the most famous chefs and restaurateurs choose for themselves. To supplement, try *A Book of French Wines* by P. Morton Shand or the more limited book, *The Wines of Bordeaux* by J. R. Roger. Other possibilities are *Greek Cooking* by Robin Howe, *Polish Cooking* by Marja O-Monotowa, *Third Book of Curries by* Harvey Day, and *Cooking for the Wayward Diabetic* by Lily MacLeod.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 30, June, 1961

*We operate our own food service. E. Jagow. —p. 70.

College Food Service. What are the management factors that affect college food service? First is the institution's philosophy (is education of "the whole man" the aim?). Second comes menu policy as related to costs, level of service, menu pattern and its cyclical variations, and recognition of class and geographic origin of the students served. A third factor concerns facilities — decor, up-to-date equipment, and atmosphere (also to be included

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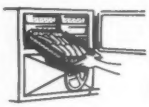

The compartment cooks vegetables, meats, poultry; fish, eggs, rice and combination dishes; thaws frozen foods, heats canned goods, blanches potatoes, precooks meats and vegetables.

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is a study of the economic unit for a food service activity). Another concern is personnel and staff—professional status, salary levels, circumstances encouraging initiative and professional improvement, and evaluation of dietetic and management ability. Consideration must be given to production controls, financial controls, and policies governing the activities of the college business manager. Can the business manager develop a staff to cover expansion, or is he limited to the extent that he must hire outsiders for all the extra work as the school grows (referring particularly to the concessionaire)?

FOOD ENGINEERING

Vol. 33, June, 1961

*Europeans probe accelerated freeze-drying. E. Petersen.—p. 33.

European Freeze-Drying Practice. Today's emphasis is on mechanical design that can boost plant capacity for a given installation cost. Principal aims are more efficient vacuum plants and greater use of mechanical handling and conveying materials. In Europe, these engineering factors are pertinent: high vacuum drying by contact and radiation; obtaining vacuum with steam ejectors or refrigerated vapor traps used in conjunction with mechanical pumps (these methods are described and drawings of the systems are included). A freeze-drying plant in the British Ministry of Food's Experimental Factory at Aberdeen was designed and manufactured by a Danish firm and is described. Customer acceptance of freeze-dried foods is evaluated and points on packaging are brought out (a packaging machine from Sweden is photographed).

FOOD SERVICE MAGAZINE

Vol. 23, July, 1961

*What's ahead for infrared. D. W. Stewart.—p. 27.

*Sandwich combinations that make sales. H. Sanstadt.—p. 34.

*3-in-1 gourmette created from *Food Service Magazine* feature. J. R. Myers.—p. 36.

*Put paper place mats to work for you. N. Greene.—p. 40.

Infrared Heating. Outdoor dining, a pleasant European custom, hasn't hit this country in full force, but infrared heating equipment makes it possible. Infrared quartz lamps mounted in the ceiling provide the heat needed for an open-air restaurant. This type of heat is extremely efficient and relatively inexpensive, adaptable, and simple to install and maintain. Its widest use now is to warm food or tableware, and it has advantages for broiling. The many possibilities of its use are pictured and brought out.

Sandwich Sales. Sandwiches, almost more than any other food, lend themselves to sales promotions that raise check averages. Bread and protein filling, plus greenery, is a good basic meal, a natural to combine with soup, salad, or dessert and beverage. Preparation hints are given and a list of merchandising aids from thirty-two food companies is included.

Convertible Counter. About one year ago, a new concept in a space- and labor-saving counter for food service was introduced by a food service engineer. The concept is simple: three basic and extremely flexible modular units can be used in any combination to create a multi-purpose dining facility from a single room—from a coffee shop with patrons seated at a convertible counter, to a noonday buffet (chairs removed, patented top sliding back and under to reveal electric hot units and a refrigerated section), to a continental buffet for evening dinner. The plan caught the fancy of the restaurant industry, a model was built, and royalties on its manufacture are earmarked for donation to the Food Facilities Engineering Course of Cornell University, to help train future food service engineers. The unit has possibilities for school lunch (converting gyms to cafeterias at noon), in hospitals for feeding wheel-chair patients, for executive dining rooms, and the like.

Paper Placemats. The success of paper placemats for promotion and decoration is known; another aspect of their use is worthy of note—sanitation. Research in the Department of Plant Sciences, Syracuse University has shown: (a) Bacteria counts on serving surfaces of tables and counters ranged from zero to 800,000 per square foot in the same restaurants on the same day. (b) Serving surfaces were often more unsanitary immediately after cleaning than before. The second finding demonstrates the futility of using a wet sponge or cloth for cleaning up. Twelve promotion ideas, using placemats, are described.

HOSPITAL MANAGEMENT

Vol. 91, June, 1961

*Warm weather refreshments for all ages.—p. 58.

Refreshing Beverages. No matter what the season, the beverages suggested here will find acceptance. Recipes are given for chocolate banana cooler, orange egg nog, peachy drink (using frozen peaches), mocha frost, and the traditional Swedish cookie, spritz.

HOSPITALS

Vol. 35, June 1, 1961

*Search for efficiency through the dietary budget. K. Wallace.—p. 68.

Vol. 35, June 16, 1961

*The dynamics of decisions. R. Klein.—p. 49.

*Keeping summertime menus high in protein.—p. 84.

Vol. 35, July 1, 1961

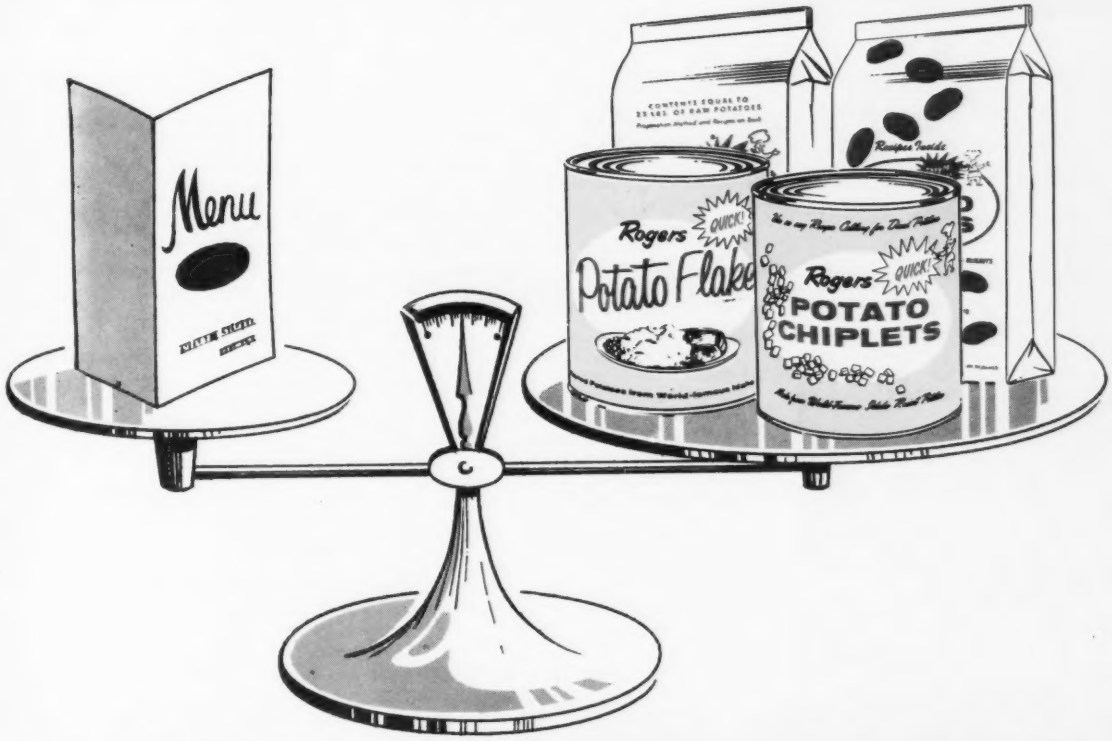
*Contract food service grows with a hospital.—p. 62.

*Sixth-year evaluation of a course for food service supervisors. G. Anthony.—p. 79.

The Dietary Budget. The importance of the budget as an indication of efficiency is reviewed. Methods of food and labor cost control analysis are

REPORT FROM ROGERS

A Balanced Menu Needs Rogers Quick Potatoes



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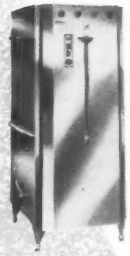

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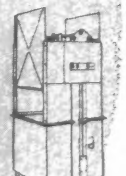

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pointed out. Effects on costs of overproduction, spoilage, and poor food control are cited. Discussed in some detail are aspects of purchasing and food preparation which influence food costs. A check list is included of some daily operations which may contribute to the search for lower costs and better service (involving equipment, storage space, issuing supplies, time element, and cooking methods).

Dynamics of Decisions. There are three pitfalls in decision-making: (a) the difficulties in perceiving and weighing the importance of the goal, (b) the lack of knowledge of all possible choices, and (c) the lack of knowledge as to the consequences of the choice. Awareness of goals is particularly important in institutional life, where decision-making is viewed as a central feature of the administrative process. Three levels of decisions are considered: those regarding procedures, those regarding managerial activities, and those regarding policy. Each supervisor should be prepared to engage in a continual process of self-evaluation to gauge the results of decisions in terms of efficiency of operation, cooperation and understanding of colleagues, morale of employees, efficient use of resources, and contribution to the goals of the organization. A strategy of pace, of timing, of education, and of persuasion is vital.

Entrées for Protein. Emphasizing meal planning to include adequate protein, interesting lunch and supper entrées are suggested. Among them are quantity recipes for pork Oriental, saucy meat sandwiches, harlequin lamb loaf, baked meat balls, turkey and seafood salads, and Monaco cheese salad. A helpful chart lists various meats, suggesting size of serving (3 oz. or equivalent), giving servings per pound and quantities for 100 servings.

Contract Food Service. Edward Hospital, Naperville, Illinois, is a plant originally constructed to house tuberculosis patients. Now part of it has been converted for use as a community hospital. Contract food service is being used for the 45-bed unit. Approximately 3723 meals were served to patients during a twenty-eight day period in May, 1961 at a total food cost of $1892.51 and a total labor cost of $3158.68. Average cost per patient was $5.45. When the building program provides 120 beds, it is anticipated that the present thirteen employees of the food service company will be able to handle two to three times as many meals as they now do (aided by a tray assembly line and a new food service area). The hospital feels that contract food service provides better food, served more quickly, at a lower cost of operation.

Hospital Food Service Supervisor Course. The history of the course instituted at Michigan State University in 1955 is reviewed. A new system of prescreening and follow-up interviewing was inaugurated in July 1960: state representative dietitians assist the course coordinator with this work (they are all traveling consultants in their respective states for either the health or welfare departments). Since its inception, the course has been taken by 157 men and women, representing 150 hospitals of all sizes and types. Age of students has ranged from eighteen to sixty years. Benefits of the course to those taking it and to hospital administrators are described.

INSTITUTIONS

Vol. 49, July, 1961

*Are kitchens still being designed for horse and buggy operation? A. C. Avery.—p. 6.
*The magic of spices.—p. 12.
*Sanitation for food service workers. T. M. Richardson.—p. 22.
*Fresh ways to serve fresh vegetables. Part I. —p. 24.
*Answers to baking problems.—p. 48.
*Processed apple products.—p. 66.
*New directions in food service design.—p. 106.
*New ideas with frozen potatoes.—p. 114.

Horse and Buggy Kitchen. Common mistakes in kitchen layout are cited: (a) solid lines of equipment parallel to serving lines so that cooks have to walk around them; (b) equipment combinations not close to the food storage units that support them; (c) all cooking equipment under postage-stamp hoods, leaving no worktable space for ingredients and hand utensils; (d) worktables located some distance from ovens or steam-jacketed kettles; and (e) making labor-saving pieces of equipment stationery (placing them on wheels, or duplicating in each area is often advisable). Sanitary aspects of design are emphasized and the need for more humidity-sensing and -indicating devices, muscle-saving devices, and temperature-indicating devices is stressed. Efficient use of vertical space and the lighting of oven and kettle interiors and storage areas are also mentioned.

Spice Magic. Americans are using over 180 million lb. spices and herbs annually, and the homemaker is leading the way. Consequently, the art of spicing should be practiced more at the institutional level. Hints on purchasing and storage and cooking are offered. One chart is included which lists categories of foods (appetizers, desserts, salads, and so on) and suggests appropriate spices for various products (cranberry juice, apple pie, cole slaw). Another chart lists all fifty spices available for institutional use and tells where they are effective.

Sanitation. Can women work as efficiently as men in a dishwashing department? Apparently they are more careful than the average male and also keep their area cleaner; they are also more faithful. The work is not too heavy for a sturdy, healthy woman. Another question: is there any advantage to adding silver dip or drying agents to the dishwashing process? The value of such products is discussed.

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Saturated (total)	2.0 Gm.
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Oleic acid	2.5 Gm.
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**U. S. Department of Agriculture Home and Garden Bulletin No. 72, Sept., 1960.*

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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products are treated best cooked with great care and served with a minimum of seasonings that might otherwise obscure natural flavors. A crisp-tender vegetable is to be desired. Preparation and cooking techniques for various types are explained (such as an "X" cut in the base of stems of Brussels sprouts, broccoli, and cauliflower), and unusual seasoning ideas are given. Recipes are included for fresh carrots in cheese sauce, green beans Mexicaine, acorn squash supreme, celery soufflé, braised lettuce de luxe, Dutch Brussels sprouts, escalloped eggplant with tomato, green beans almondine, tomato pudding, and French fried Italian squash.

Baking Problems. Instant pie mixes and pudding fillings should not be kept in summertime for more than 24 hr. Cakes that go to one side in baking may be the result of uneven shelves, uneven heat, batter improperly spread, or insufficient mixing. Directions are given for reconstituting dried whole eggs and dried egg albumin. Recipes for Russian rye bread are included.

Processed Apple Products. There is more and more demand for canned applesauce, apple slices, and apple juice. Quantity recipes are presented for harlequin meat pie (using ground beef and apple slices), turkey curry (apple slices), apple chiffon pie (applesauce), and applesauce cake.

Food Service Design. Reviewed here are current methods of reconstitution of precooked frozen foods for institutional service. The problem is twofold: first, because of the low temperature at which foods are put into the cooking equipment, the b.t.u. requirement is high and quick recovery is essential; second, some frozen foods do better in one type of cooking environment and some in another (moist or dry heat). Some degree of defrosting is desirable in anticipation of cooking, and comments are made on the influence of type of packaging.

Frozen Potato Recipe Contest. As a result of a recipe contest, nine new ideas are presented. Among the quantity recipes given are those for potato sparerib bake (first prize using frozen shredded potato patties), cocktail taters (frozen shredded potato patties), potato pizza (frozen hash brown potatoes), and party potatoes (frozen crinkle-cut French fries).

THE MODERN HOSPITAL

Vol. 96, June, 1961

*How to make the menu fit the meal. C. E. Beyer, M. E. Ericson, and J. J. Wanderstock.—p. 112.

*A pocket-size card keeps special diet descriptions at physicians' fingertips. A. Hogan and M. Johnson.—p. 115.

*The hospital kitchen is no place for careless dishwashing technics. J. Hartman.—p. 118.

Menu Planning. The menu is a blueprint for the entire food service operation and should be planned far enough in advance to provide efficient operation (minimum of one week ranging up to even six weeks if provisions are from other than local sources). Points at which menus must meet requirements are adequacy, cost, execution, and acceptability. Each of these aspects is discussed.

Condensed Diet Manual. The patient care committee of Stamford (Conn.) Hospital, revised the terminology for its diets and put them in a compact form that physicians could carry in their pockets for quick reference. The listing and abbreviated description of each diet was printed on a card measuring 8 by 3¾ in. Corners were rounded, and the card is varnished for durability. The telephone extension of the therapeutic dietitian is also included. The cards are a boon to the physicians and have promoted closer cooperation with the dietitians.

Dishwashing Techniques. Low sanitation standards were found in many hospitals by the Joint Commission on Accreditation of Hospitals, especially in dishwashing. A dish or utensil is "clean" when it shows no trace of soil or stain (visual) and when, on bacterial analysis, it reveals less than 100 bacteria per inch of contact surface. The advantages of automatic equipment are pointed out, and procedure for hand washing, using a three-compartment sink, are illustrated.

PERSONNEL JOURNAL

Vol. 40, June, 1961

*Internships in the development of people. H. Clay and L. O. Olsen.—p. 58.

The Internship. Typical management development procedures have not encouraged the individual to assume initiative and responsibility for self-development; managers do not possess the skills necessary for making appraisals and aiding subordinates in formulating self-development plans; proficiency along this line cannot be acquired by group training or mere performance of the acts involved. The answer lies in an internship approach (coaching, or closely supervised, individual guidance for transition from theoretical learning to the practice of professional skills) which enables both the manager and his subordinate to carry out effectively the appraisal process on an independent basis. Such an approach requires the staff man's presence at the development interview (his role is like that of an "interlocutor" and a therapist in psychotherapy). Another phase of the internship consists of follow-up sessions with manager and subordinate to review what happened in the development interview. With most managers it is estimated that at least two sessions of an internship nature, and perhaps three, are needed before they are adequately prepared to handle the development interview.

PROFESSIONAL NURSING HOME

Vol. 5, May, 1961

*Investing food money wisely. J. Hartman and M. Zickefoose.—p. 12.

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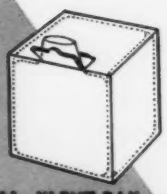

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Vol. 3, June, 1961

*How to plan daily menus . . . an evaluation program for aides. J. Hartman and M. Zickefoose.—p. 12.

Investing Food Money. Ten purchasing procedures are listed which will help insure "good buys" in food. Hints are given for writing a market order, and a market order worksheet is illustrated. A food buying guide is included, covering beverages, cereal, dairy products, fish, poultry, meat, vegetables, and fruits.

Planning Menus. Problems of menu planning can, for the most part, be eliminated. Following the procedures suggested will give an institution answers to such questions as: (a) Was the food nutritionally adequate? (b) Was increased cost due to a rise in food prices? (c) Were more expensive foods used? (d) Were quantities per person increased? (e) Were more people fed? A meal pattern guide for a week and a check sheet (daily food guide) to aid menu planning are illustrated. Ten steps are outlined for choosing recipes for acceptable menus (considering equipment, simplicity, food likes, expense, testing, portion size, and so on).

QUICK FROZEN FOODS (Retail Edition)

Vol. 23, April, 1961

*Birds Eye baby packs: Small, easy to store.—p. 64.

*Italian foods—the favorite nationality dishes.—p. 93.

*Frozen pizza sales tap $200-250 million market.—p. 99.

Frozen Baby Foods. A new dehydrofrozen baby food line was found acceptable by mother and baby in a test lasting a year and a half. Researchers stated that without exception, all mothers of the forty-nine babies (to which a variety of the dehydrofrozen baby foods were fed) felt that dehydrofrozen frozen foods appeared fresher and more appetizing. The foods are packaged in 2½-oz., single-serving aluminum pouches. The new product was preferred by most of the mothers because of ease of preparation and storage, and they agreed that the small packages allowed a greater variey of foods to be fed to their babies.

Frozen Italian Foods. The phenomenal increase in spice sales and the space being devoted in women's magazines to exotic dishes from other countries are evidence that the American diet is becoming more varied. On the frozen side, there has been a rise in nationality product sales from $26 million in 1955 to $72 million in 1959; $42 million was accounted for by Italian foods. The frozen product is more acceptable than the canned since canning forces over-cooking of the pasta, whereas freezing offers the consumer a far more "home made" form. The shelf product must be dehydrated for preservation and suffers some destruction of flavor in the drying process. The pasta is available as egg noodle, green noodles, rigitoni, cabatelli, and gnocchi (a pasta usually made with flour and potato).

Frozen Pizza. Frozen pizza now plays an important role in the American menu. Why? It can be used as a snack, a main course, an appetizer. In frozen form, its natural convenience is enhanced, particularly because it can be stored against emergency or whim, popped in the oven with no other fuss, and served hot.

RESTAURANT MANAGEMENT

Vol. 88, June, 1961

*Avocado. T. R. Bradley.—p. 60.

*Salads fight the battle of the bulge. A. Easton.—p. 64.

*Vignettes of restaurant history; famous chefs—Escoffier. D. E. Lundberg.—p. 71.

*Cutting waste motion through kitchen layout. N. Kirikos.—p. 72.

Avocado. How well do you know the avocado? It is cultivated as a major crop only in limited areas in southern California and southern Florida. Mexican and Guatemalan varieties are grown in California—the Fuerte, the Haas, the MacArthur, Rincon, Zutano, and Anaheim. Of the Florida varieties, the major crop comes from the Lula, Booth 8, and Booth 7. At the retail level, most avocado sales are made as a result of "impulse buying." Restaurants could use this technique to advantage (through attractive merchandising displays). This fruit is easily prepared and usable not only in salads and appetizers, but also in hot and cold entrées (chili con carne, crab meat, or chicken served in avocado shell, omelets, and so on). For purées, dips, and cream soups, No. 2 and No. 3 grade fruit can be used. Nutrition-wise, it contains a high percentage of the unsaturated type of fats and is a good source of the B-complex vitamins. Handling and storage suggestions are given, as well as five recipes.

Salads. To combat the public craze for low-calorie liquid meals, emphasis on the low-calorie salad meal is in order. Enticing combinations, including those preferred by men, are suggested. Tips on preparation are helpful, especially those for preparing cole slaw, dessert salads (frozen or with sherbet) are enumerated, and two recipes are included for low-calorie dressings, neither using oil.

Escoffier, the Chef. Auguste Escoffier became the greatest name in the history of his profession. He inspired others; nearly all who worked with him became name chefs. The man had the most magnificent settings in which to display his ideas—the Savoy and Claridge Hotels of London—and the most renowned of bosses—Cesar Ritz. The kitchen, Escoffier insisted, must be a synchronized place (he is credited with organizing the kitchen into work centers, each with its own head and specific functions). Cleanliness was required. In his actions and in his writings, the king of chefs urged simplicity and beauty. He influenced a return to delicacy and fine preparation of the food itself and called a halt to

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the custom of decorating hot dishes (except for garnishing).

Efficient Kitchen Layout. New equipment and changes in layout to save steps and motion can cut labor costs considerably. "Before" and "after" arrangements of a typical kitchen are illustrated, with emphasis on a sensible procedure of work-flow from delivery to storage and refrigeration, to preparation, to service, to dishwashing with the least amount of traffic.

SCHOOL LUNCH JOURNAL

Vol. 15, April, 1961

*School lunch certification in Mississippi. H. F. Holmes.—p. 13.

*Planning school lunch facilities. W. Bash, J. Martin, A. M. Botts, G. K. Farrier, and G. Gunderson.—p. 22.

School Lunch Certification. In the early 1950's, the need for school lunch certification was felt in Mississippi. In 1960, it was finally required of all supervisors and managers of school lunch programs. The course of study required by the state is outlined.

Planning Facilities. One section deals with the location of the school lunch department, floors, ceiling, walls, lighting, acoustics, and ventilation. Another phase is concerned with storage areas and facilities. Finally, sanitation facilities of school lunchrooms are discussed.

VOLUME FEEDING MANAGEMENT

Vol. 16, June, 1961

*Ice cream. E. Blair.—p. 13.

*Picnics . . . a new twist for old promotions.—p. 20.

*Food, equipment & people.—p. 26.

*"Satellite" elementary school. O. Webber.—p. 41.

*Product evaluation report: mobile service equipment.—p. 49.

Ice Cream. The perennial favorite, ice cream, can be more than an ordinary dessert. A few thin, chocolate-covered, leaf-shape cookies arranged with a scoop of ice cream can become a popular item. Of course, there is the favorite, pie *à la mode;* other items deserve this treatment—warm applesauce, broiled peaches, Indian pudding, pecan waffles, and so on. Is something fancier needed? Try flaming eclairs, snowballs, baked Alaskas, or ice cream pies. Proper storage protects ice cream quality (kept between zero and −10°F.). Move it to other storage at 8° to 12°F., 24 hr. before serving. Dipping is important, too; never use ice cream scoops for anything else. Dipping hints are given.

Picnic Mood. The picnic idea or atmosphere can perk up service and serve promotional purposes. Setting aside one room (or porch or patio) for a picnic-type lunch, a chuck wagon arrangement (using a fabricated covered wagon facade), or providing "take-out" picnics are possibilities. Popular and interesting picnic foods are suggested as are tips on service.

Popular School Lunch. Participation in the school lunch program at Westfield (N. J.) High School averages about 88 per cent with participation in the Type A lunch about 49.4 per cent (1450 children served daily). This high average is the result of an enthusiastic staff (twenty-three employees), a well defined seventeen-day cycle menu, and intelligent use of equipment. Typical menus are listed.

"Satellite" Elementary School. By establishing central production and storage centers and using these to supply their lunchrooms, a school system can reduce premises, equipment, and staff. This so-called "satellite" plan is further revised to incorporate the "zero food bank" concept. The central kitchen goes on a factory production schedule 8 hr. a day, five days a week, twelve months a year. The output is cooked, frozen, then drawn from freezer storage as needed. Simpler items, such as potatoes, gelatin, and some desserts, could be prepared at each lunchroom. Two layouts are included—one for the traditional lunchroom set-up (including storage space and so on), the other for the set-up described in the article, incorporating vending machines.

Mobile Service Equipment. Mobile equipment should be selected on the basis of function, flexibility, maneuverability, durability, ease of maintenance, and design details. Construction features are discussed, and the importance of combination service-storage is stressed. Size, importance of castors, maintenance factors, and new design trends are pointed up.

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Program Outline—44th Annual Meeting

THE AMERICAN DIETETIC ASSOCIATION

St. Louis—October 24-27, 1961

All meetings and activities, October 24 through 26, unless otherwise specified, will be at the Kiel Auditorium.

Saturday, October 21

9:30 a.m.–12 noon—CONFERENCE OF FACULTIES OF COLLEGE AND UNIVERSITY HOME ECONOMICS DEPARTMENTS AND APPROVED DIETETIC INTERNSHIPS, Sheraton-Jefferson Hotel (closed meeting)

1:30–4:30 p.m.—CONFERENCE OF FACULTIES OF COLLEGE AND UNIVERSITY HOME ECONOMICS DEPARTMENTS AND APPROVED DIETETIC INTERNSHIPS, Sheraton-Jefferson Hotel (closed meeting)

Sunday, October 22

1:30–4:30 p.m.—CONFERENCE OF FACULTIES OF COLLEGE AND UNIVERSITY HOME ECONOMICS DEPARTMENTS AND APPROVED DIETETIC INTERNSHIPS, Sheraton-Jefferson Hotel (closed meeting)

2:00–8:00 p.m. — REGISTRATION, Sheraton-Jefferson Hotel

7:00–8:30 p.m.—ORIENTATION OF NEW DELEGATES TO THE HOUSE OF DELEGATES, Sheraton-Jefferson Hotel

Monday, October 23

7:30–8:20 a.m.—REGISTRATION OF DELEGATES TO THE HOUSE OF DELEGATES, Sheraton-Jefferson Hotel

8:00–8:20 a.m.—REGISTRATION, Sheraton-Jefferson Hotel (delegates only)

8:30 a.m.–12:15 p.m. — MEETING OF THE HOUSE OF DELEGATES, Sheraton-Jefferson Hotel (Members of the Association are encouraged to audit this meeting.)

8:30 a.m.–8:00 p.m.—REGISTRATION, Sheraton-Jefferson Hotel

12:30–3:00 p.m.—LUNCHEON, Sheraton-Jefferson Hotel (members of the House of Delegates and Alternate Delegates only)

3:00–5:00 p.m.—MEETING OF THE HOUSE OF DELEGATES, Sheraton-Jefferson Hotel (Members of the Association are encouraged to audit this meeting.)

7:30–10:00 p.m.—MAKING THE MOST OF YOUR CREATIVE ABILITIES (will include project displays from states and discussion of present and future Section activities), Sheraton-Jefferson Hotel

Tuesday, October 24

7:30–8:00 a.m.—REGISTRATION OF DELEGATES TO THE HOUSE OF DELEGATES, Sheraton-Jefferson Hotel

8:00–9:45 a.m.—MEETING OF THE HOUSE OF DELEGATES, Sheraton-Jefferson Hotel

8:30 a.m.–4:00 p.m.—REGISTRATION, Kiel Auditorium

8:30 a.m.–5:00 p.m.—VISIT EXHIBITS, Kiel Auditorium

10:15–11:15 a.m.—OPENING SESSION, Kiel Auditorium—World Health Problems Today

11:20 a.m.–12:20 p.m.—CONGREGATE AND RELATE
Let's Streamline Our Parliamentary Procedure
Our Role in Nutrition of the Aging—At Home and in Institutions.
College Food Service Today

12:45–3:00 p.m. — THE STRATEGY OF COMMUNICATION: Achieving Effectiveness in Administration; Achieving Effectiveness in Medical Therapy

12:30–2:15 p.m.—FOOD SERVICE MANAGEMENT TODAY

3:15–4:30 p.m.—BUSINESS MEETING OF MEMBERS OF THE AMERICAN DIETETIC ASSOCIATION—Association Highlights of 1960-1961—with a Look to the Future

8:00–9:15 p.m.—LATEST ADVANCES IN NUTRITION–YOUR PROFESSION AND THE TWO CULTURES, Sheraton-Jefferson Hotel

Wednesday, October 25

7:15–9:15 a.m.—BREAKFAST AND MEETING FOR PRESENT AND INCOMING EXECUTIVE BOARDS OF STATE DIETETIC ASSOCIATIONS, Sheraton-Jefferson Hotel

8:00–9:15 a.m.—CONGREGATE AND RELATE, Kiel Auditorium and Sheraton-Jefferson Hotel
Meeting for Dietary Consultants to Small Hospitals and Similar Facilities
Orientation for Hospital Administration Residents within the Hospital Structure

8:30 a.m.–4:00 p.m.—REGISTRATION

9:00 a.m.–5:00 p.m.—VISIT EXHIBITS

FISCAL CONTROL

9:30–10:00 a.m.—*The Need for Fiscal Control*

10:00–11:55 a.m.—*Estimating Direct and Indirect Costs and Income*

12:55–2:25 p.m.—*Evaluating Fiscal Control*

3:00–4:25 p.m.—*Efficiency in Personnel Utilization, Equipment, and Physical Layout*

OBESITY AND WEIGHT CONTROL

9:45–11:05 a.m.—*Preventive Weight Control Programs*

11:35 a.m.–12:30 p.m.—*Social and Cultural Aspects in Changing Food Habits*

1:30–3:05 p.m.—*"Preferred Weight"; Newer Findings in Appetite and Weight Control*

3:30–5:00 p.m. — RESEARCH METHODS AND DIETARY SURVEYS

3:30–5:00 p.m.—TEACHING METHODS

5:00–6:00 p.m.—THE A.D.A. EXECUTIVE BOARD AT HOME TO DIETETIC INTERNS, Sheraton-Jefferson Hotel

6:00–8:00 p.m.—ALUMNAE MEAL FUNCTIONS, Colleges, Universities, and Military Services, Sheraton-Jefferson Hotel

FREE EVENING

Thursday, October 26

7:15–8:15 a.m. — ALUMNAE BREAKFASTS, DIETETIC INTERNSHIPS, Sheraton-Jefferson Hotel

8:00–9:30 a.m.—CONGREGATE AND RELATE, Kiel Auditorium and Sheraton-Jefferson Hotel
Food Service Supervisor Training Programs
Disaster Feeding and Civil Defense Planning
Combating Food Misinformation

8:30 a.m.–4:00 p.m.—REGISTRATION, Kiel Auditorium

9:00 a.m.–4:00 p.m.—VISIT EXHIBITS

NEWER CONCEPTS IN THE TREATMENT OF DIABETES

9:45–10:55 a.m.—*Oral Drugs; Fat Levels in Diabetic Diets; and Utilization of Carbohydrates from New Food Products*

11:35 a.m.–12:40 p.m.—*The Effects of Customs, Emotions, and Behavior on Diabetes Mellitus*

ATHEROSCLEROSIS TODAY

1:45–3:10 p.m.—*Should the American Diet Be Drastically Modified?; An Over-All Look at Atherosclerosis*

3:40–5:15 p.m.—*Recent Epidemiologic Studies in Atherosclerosis and New Preventive Programs*

QUALITY FOOD

10:30 a.m.–12:15 p.m.—*Clientele's Standards of Quality Food vs. Our Standards; Selective vs. Non-Selective Menus*

1:15–2:45 p.m. — *New Potentials for Convenience Foods; Precooked Frozen Food Standards*

3:30–4:45 p.m.—*Product Standardization for Quality and Profit Control*

7:30–10:00 p.m.—ANNUAL BANQUET, Sheraton-Jefferson Hotel

Friday, October 27

All meetings in the Sheraton-Jefferson Hotel

7:15–8:15 a.m.—ALUMNAE BREAKFASTS, Dietetic Internships

8:30–10:00 a.m.—CONGREGATE AND RELATE
Mental Hospital Food Service

Teaching Student Nurses
School Food Service Today
"Dial-a-Dietitian" Program
Standardized Recipe Program Development
The Shared and Part-Time Dietitian

10:00–11:00 a.m.—THE A.D.A. EXECUTIVE BOARD WELCOMES OUR VISITORS FROM OTHER LANDS
THE FUTURE OF THE AMERICAN DIET

9:45–11:50 a.m.—*Today's Food Programs in the United States; An Evaluation of New Food Products; Latest Findings in Dental Caries*

2:40-3:50 p.m.—*New Ideas for the Therapeutic Dietitian; Newer Dimensions in Patient Care; Short Methods of Dietary Calculation and New Data on Food Composition*

12:15–2:00 p.m.—HISTORY OF THE ASSOCIATION LUNCHEON
PLANNING A NEW DEPARTMENT OF DIETETICS OR REMODELING ONE?

10:15 a.m.–12:05 p.m.—*The Administrator, Architect, Engineer, and Dietitian*

2:25–3:40 p.m.—*Specifications for a New or Remodeled Department of Dietetics; Automation in Food Service*

The tentative program, including names of speakers and their topics, will appear in the October issue of the JOURNAL.

COMMERCIAL EXHIBITORS—44th ANNUAL MEETING THE AMERICAN DIETETIC ASSOCIATION KIEL AUDITORIUM, ST. LOUIS, OCTOBER 24, 25, and 26, 1961

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Corning Glass Works
Cory Corp.
The Cream of Wheat Corp.
Crescent Metal Products, Inc.
Custom Food Products, Inc.

Diamond Crystal Salt Co.
Dietary Products, American Hospital Supply Corp.
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Foster Refrigerator Corp.
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General Foods Corp.
General Mills, Inc.
Gerber Products Co.
Green Giant Co.
Groen Mfg. Co.

H. J. Heinz Co.
Heublein, Inc., Food Div.
The Hobart Manufacturing Co.
Hoffmann LaRoche, Inc., Fine Chemicals Div.
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The Hunt-Wesson People

Institutions Magazine

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Keyes Fibre Co.
Klenzade Products, Inc.
Koch Supplies, Inc.
Kraft Foods

Libbey Glass Div., Owens-Illinois Glass Co.
Libby McNeill & Libby
Eli Lilly and Co.
Lincoln Manufacturing Co., Inc.
J. B. Lippincott Co.
Loma Linda Food Co.
Lo-Sodium Dairy Products Corp.
Lowerator Div., American Machine & Foundry Co.

McCormick & Co., Inc.
The Macmillan Co.
Market Forge Co.
Mead Johnson Laboratories
Meals-on-Wheels System
Mercury Mfg. Co., Div. of Steele Harrison Mfg. Co.
Metropolitan Wire Goods Corp.
Middleby-Marshall Oven Co.
Louis Milani Foods, Inc.
Mitchell Foods, Inc.
Morton Salt Co.
Multi-Counter Manufacturing Co., Inc.

National Biscuit Co.
National Dairy Council
National Live Stock & Meat Board
The Nestle Co., Inc.
The H. R. Nicholson Co.
Nutting Truck and Caster Co.

Ocean Spray Cranberries, Inc.
Ocoma Foods Co.
Samuel Olson Mfg. Co., Inc.

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Valcour Imprinted Papers, Inc.
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Webco Distributors, Inc.
Wisconsin Dept. of Agriculture
Worthington Foods, Inc.
Wyandotte Chemicals Corp.

Your 44th Annual Meeting

October 24-27, 1961
St. Louis, Missouri

THOSE WHO attend the Annual Meeting will have the opportunity of hearing an impressive list of speakers who have earned wide recognition in their fields of specialization. The names of a number of these speakers were given to you in the July and August issues of the JOURNAL. In this issue, we are happy to present the names of several more persons who have accepted invitations to appear on our program.

Tuesday, October 24—FOOD SERVICE MANAGEMENT

Donald Greenaway, Executive Vice President, National Restaurant Association, Chicago — "What Is Needed in Food Management Today?"

Loyal E. Horton, Director, Food Services, Associated Colleges of Illinois, Chicago — "Residence Hall Food Service Programs"

John Zugich, Assistant Director, University of Michigan Medical Center, Ann Arbor—"Viewpoint of an Administrator of a Hospital Which Has a Dietitian in Charge of the Department of Dietetics"

Henriette Gebert, Director, Department of Dietetics, Passavant Hospital, Chicago—"Viewpoint of a Director of Dietetics of a Hospital"

Elizabeth Perry, Director, Hospital Division, Stouffer's Management Food Service, Cleveland — "Viewpoint of a Dietitian in the Field of Contract Food Service"

Wednesday, October 25—FISCAL CONTROL

William W. Frasure, Ph.D., Professor of Accounting, Graduate School of Business Administration, University of Pittsburgh—"The Need for Fiscal Control"

Charles Moore, Assistant Director, University of Kansas Medical Center, Kansas City—"Estimating Income in the Department of Dietetics"

Aimee Moore, Ph.D., Associate Professor, Institution Management, University of Missouri—"The Importance and Interpretation of Specifications and Inventories"

Lt. Colonel Ruby Winslow, Director of Dietetics, Walter Reed General Hospital, Washington, D.C.—"Personnel in Light of Fiscal Control"

Katherine Flack, Director of Nutrition Services, State of New York Department of Mental Hygiene, Albany—"Physical Plant Arrangement and Equipment as Related to Fiscal Control"

Friday, October 27—THE FUTURE OF THE AMERICAN DIET

Arlene Payne, doctoral candidate, School of Education, University of Chicago—"New Ideas for the Therapeutic Dietitian"

Faith Clark, Ph.D., Director, Household Economics, Research Division, U. S. Department of Agriculture, Washington, D.C.—"Short Methods of Dietary Calculation"

CONFERENCES

Several conferences have been scheduled for the Annual Meeting. As many of you have already discovered, these informal periods provide opportunity to discuss common problems and exchange ideas which often contribute toward the solution of on-the-job "sticklers." Conference leaders and the topics to be covered are:

Tuesday, October 24

"Let's Streamline Our Parliamentary Procedure" — Leader: Marguerite Grumme, Registered Parliamentarian, St. Louis

"Our Role in Senior Citizen and Nursing Home Activities" — Leaders: Geraldine Piper, U.S. Public Health Service, Washington, D.C. and Nelda Ross Larsson, New York City

"College Food Service Today"—Leader: Doris Hittle, Administrative Dietitian, Iowa State University, Ames

Wednesday, October 25

"Teaching Students in Hospital Administration" — Leader: Grace Stumpf, University of Michigan Hospital, Ann Arbor

"Dietary Consultants to Small Hospitals and Similar Facilities"—Leader: Geraldine Getty, Dietitian Consultant, Arkansas State Board of Health, Little Rock

Thursday, October 26

"Food Service Supervisor Training Programs"—Panel: Myrtle B. Van Horne, Coordinator, Food and Nutrition and Continuing Education Service and Assistant Professor of Home Economics, Michigan State University, East Lansing; Alma McDougall, Associate Professor of Hotel and Institution Administration, The Pennsylvania State University, University Park; Ruth E. Sylvester, Director of Dietetics, Alleghany General Hospital, Pittsburgh

"Disaster Feeding and Civil Defense Planning"—Leader: Vera A. Tharp, Nutritionist, Illinois Department of Public Welfare, Springfield

Friday morning, October 27

"Mental Hospital Food Service"

"School Food Service Today"—Leader: Helen Underwood, Director of School Lunch Program, Caddo Parish School Board, Shreveport, Louisiana

"Teaching Student Nurses"—Leader: Mary E. Kelly, Associate Professor of Dietetics, School of Nursing, Medical College of Virginia, Richmond

"'Dial-a-Dietitian' Programs"—Panel: Muriel Wagner, Horace Sipple, Ph.D., and A.D.A. Committee Members

"The Shared and Part-Time Dietitian"—Leader: Betty Hoover, Rush Memorial Hospital, Rushville; Margaret Mary Hospital, Batesville; Dearborn County Hospital, Lawrenceburg; and Decatur County Hospital, Greensburg, Indiana

"Planning a Department of Dietetics" —presentation by a team from the University of Oklahoma Medical Center

St. Louis Attraction

Shaw's Garden—Known as Shaw's Garden in honor of its founder, the Missouri Botanical Garden contains the largest collection of plant life in the Western Hemisphere. It is comparable only to London's Kew Gardens. There are more than 11,000 species of plants at Shaw's Garden. It is the home of some of the world's rarest orchids and is well known for its botanical and floral displays and tropical lily ponds. The country home which Henry Shaw built in 1849 is on the grounds of these famous gardens. Now maintained by a trust fund, it has been recently restored and is open to the public.

The *Climatron*, the world's only Geodesic dome, fully climate-controlled greenhouse may now be visited by the public daily at Shaw's Garden. Considered a revolutionary design in botanical "circles," the Climatron is constructed of aluminum tubing and Plexiglas panels. All equipment is contained in the circular concrete base, permitting an unobstructed view of displays. By means of a unique air-conditioning system, temperature and moisture conditions can be varied in different sections of one huge room. Climates can thereby be likened to the natural environments of the extensive collection of plants on display. In addition, Garden scientists are able to conduct botanical experiments which can be viewed by the public.

IMPORTANT . . . MAIL YOUR APPLICATION PROMPTLY

Application for Housing Accommodations

THE AMERICAN DIETETIC ASSOCIATION

St. Louis, Missouri • October 24-27, 1961

For your convenience in making hotel reservations for the coming meeting of THE AMERICAN DIETETIC ASSOCIATION, hotels, with rates, are listed below. Use the form at the bottom of this page, indicating your first, second and third choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. All reservations must be cleared through the Housing Bureau. ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND HOUR OF ARRIVAL AS WELL AS DEFINITE DATE AND APPROXIMATE HOUR OF DEPARTURE, ALSO NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY ACCOMMODATIONS REQUESTED MUST BE INCLUDED.

Hotel	Single Bed	Double Bed	Twin-Bedded	Suites
Chase-Park Plaza	$10.00 - 16.00	$13.00 - 18.00	$14.00 - 22.00	$23.00 - 75.00
Coronado	8.95 - 14.00	11.00 - 15.50	13.50 - 18.00	20.00 - 50.00
Lennox	8.50 - 14.00	10.00 - 12.50	14.00 - 16.00	25.00 - 40.00
Mayfair	8.50 - 15.00	10.00 - 16.00	14.00 - 15.00	26.00 - 50.00
Pick-Mark Twain	7.25 - 9.25	9.25 - 11.50	12.00 - 13.25	19.50 - 29.00
*Sheraton-Jefferson	7.50 - 9.75	10.50 - 13.75	11.25 - 18.00	25.00 - 45.00
Statler-Hilton	8.00 - 11.50	11.00 - 14.50	13.00 - 15.00	29.50 - 36.50
Warwick	5.50 - 8.00	8.50 - 12.00	9.50 - 12.00	

In the event that the hotel room rate structure is changed prior to the above convention these rates will be changed accordingly.

*Headquarters hotel.

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO SEPTEMBER 24, 1961

Convention Reservation Bureau, A.D.A.
911 Locust Street, Room 406
St. Louis 1, Missouri

Please reserve the following accommodations for: THE AMERICAN DIETETIC ASSOCIATION CONVENTION in St. Louis, October 24-27, 1961.

Single Room_____ Double-Bedded Room_____ Twin-Bedded Room_____

2 Room Suite_____ Other Type of Room _____

Rate: From $_____ to $_____ First Choice Hotel_____

Second Choice Hotel_____

Third Choice Hotel_____

Arriving at Hotel (date)_____ hour_____ A.M._____ P.M. Leaving (date)_____

Hour_____ A.M._____ P.M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room or twin-bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

_____

_____

_____

(Individual Requesting Reservations)

Name _____

Address _____

City and State _____

If the hotels of your choice are unable to accept your reservation the Housing Bureau will make as good a reservation as possible elsewhere provided all hotel rooms available have not already been assigned.

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION
Henry Cavendish—October 10, 1731–February 24, 1810

"He enlarged the boundaries of knowledge," is an enviable epitaph for any man. It can well be applied to Henry Cavendish. The physical world was of intense interest to him, and chemistry, geology, mathematics, electricity, meteorology, and astronomy were fertile fields of investigation for his inquiring mind. He approached these subjects in the true spirit of science. Curiosity was coupled with exceptional patience and careful measurement. Qualitative answers did not satisfy him; he wanted quantitative results, and he approached problems with all the accuracy possible within the limits of the instruments and equipment available to him in the eighteenth century. At the same time, he was one of the most eccentric characters in scientific history.

Henry Cavendish was born October 10, 1731 at Nice, France, where his mother, Lady Anne Grey Cavendish, had gone for her health. His father was Lord Charles Cavendish, a meteorologist of distinction who received the Copley medal of the Royal Society for his invention of a maximum and minimum thermometer. His mother died when he was two years old, leaving Henry and a younger brother Frederick to be raised by their father; possibly Henry acquired his interest in science from his father, but little is known about his early life.

Cavendish spent four years at St. Peter's College, Cambridge University, but did not take a degree; one explanation is that his inquiring mind would not accept the strict religious tests that were part of the requirement for a degree. His family wanted him to enter politics, but he was a recluse, he feared and avoided people always and devoted his life to research. His family inheritance brought him a title and a fortune; he is probably one of the most high born, wealthy, and eccentric of all British chemists. When his bankers wanted to consult him about the investment of his wealth, he warned them not to bother him or he would take his money elsewhere.

Cavendish was a contemporary of Priestley and Black and was one of the group who made the basic discoveries which supplied the facts on which Lavoisier and the French school of scientists laid the foundation of modern chemistry, thus paving the way for the science of nutrition. Cavendish was the discoverer of hydrogen (1766), though he called it phlogiston, and gave the first distinct description of its properties. He clearly identified nitrogen and described its preparation and properties, but Daniel Rutherford is given credit for this discovery because of prior publication. Cavendish had no interest in priorities, honors, or publication; he was without jealousy or ambition, and his joy was in his laboratory work. To experiment, weigh, calculate, repeat, and verify results were what interested Cavendish. He introduced the term "equivalent" in chemistry; he was the first to show that gases have different specific gravities, and his research on heat was second only to that of Joseph Black. Ten years of investigation were given to the study of the combining of two volumes of hydrogen and one volume of oxygen to produce water, and that the weight of these gases before passing an electric spark through them was the same as the weight of the water produced. He was the first to show that water is a compound and not an element and though priority on this has been claimed for Watt and Lavoisier, examination of Cavendish's original notebooks proves the pre-eminence of this work. Studies on the combining of nitrogen and oxygen led to the discovery of oxides of nitrogen and nitrous acid.

Cavendish was tall and thin, with a squeaky voice, and he was shy to the point of mania and would do anything to avoid meeting people. He never owned more than one suit of clothes at a time and was frugal in everything about his own living, although he was generous to others and the scientific library he filled up at his home was open to all scientific workers. He rigidly followed the same routine and fixed habits; his books and stick were always in the same place and his hat always hung on the same peg at the Royal Society; but there was nothing rigid or routine about the working of his mind. His fame is commemorated by the Cavendish Laboratory for experimental research at Cambridge University.

REFERENCES: Robinson V.: Pathfinders in Medicine. New York: Medical Life Press, 1929; Aykroyd, W. R.: Three Philosophers. London: Wm. Heinemann. 1935; Berry, A. J.: Henry Cavendish, His Life and Scientific Work. London: Hutchison and Co., 1960.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

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Tests at the University of Michigan proved the high bacterial cleanability of stainless steel as compared with other metals used in cooking and food storage utensils*. Stainless steel proved to have highest cleanability ... worn stainless surfaces had the same high cleanability as new stainless surfaces. Stainless superiority exists because there is no glaze on a stainless surface ... it is solid, uniform metal all the way through.

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In addition to cleanability ... cooking utensils require uniform heat distribution. This has been solved by the development of stainless Three-Ply ... stainless clad cold rolled strip and sheets applied to both sides of a carbon steel core. It makes sense that in addition to cleanability, and thanks to the carbon steel core, Tri-Ply utensils provide ideal distribution of heat and a cooking surface that withstands years of hard usage.

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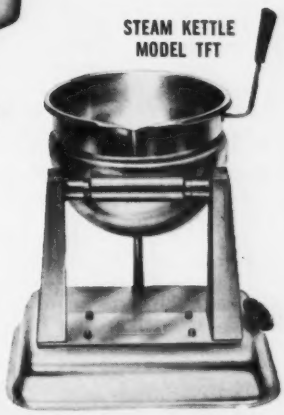

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* *Data from "Bacterial Cleanability of Various Types of Eating Surfaces," by G. M. Ridenour and E. H. Armbruster. American Journal of Public Health, V. 42 No. 2, pp. 138-139. Copyright, 1953, by American Public Health Association Inc., New York.*

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Science Students Visit Dietary Department. The National Science Fair—International is an annual event held in different places in which first place winners in the Senior Division of Science Fairs all over the world display their prize-winning projects. This year, the Fair was held in Kansas City, Missouri. More than three hundred students, accompanied by their sponsors and in some cases their parents, attended. As part of the program, tours of various institutions and industries in the area were planned. The students selected the institutions they wished to visit.

One of the most popular tours—repeated for three days—was to the University of Kansas Medical Center, in Kansas City, Kansas. Groups of one hundred came by chartered buses to the Center, where they were divided into smaller groups of twenty persons each, according to five areas of scientific interest. Each group of twenty visited one area for an hour, viewing equipment and talking to professional personnel. One of these areas was the Department of Dietetics and Nutrition, where the entire professional staff participated in the program. Hazel Parry, Acting Educational Director, reports that the tour was unified by emphasis on a central theme—the low-fat diet. In the laboratory, a dietitian showed the analysis for fat in foods. In the food production area, a low-fat tray was demonstrated, and in the clinic, the instruction was planned to show how a dietitian uses her knowledge of human relations, food preparation, economics, sociology, diet therapy, and nutrition. The tour concluded by a brief summary and a question period. The A.D.A. publications, "Chart Your Course" and "Dietitians in Demand," were distributed to the students, while *Dietetics as a Profession* was offered to the counselors. Thus, the publications are now receiving worldwide distribution.

New Program in Medical Dietetics. Beginning with the school year 1961-62, an integrated program in medical dietetics will be offered through the Department of Preventive Medicine at The Ohio State University Medical Center. The program will be patterned after the one presently operating in the School of Nursing, in which theory and practice and the requirements for a Bachelor of Science degree are completed in four calendar years. The course of study will be planned to meet the academic requirements of The American Dietetic Association and provide the clinical experience equivalent of the internship, as well as an opportunity for courses required and recommended by the new philosophy for a liberal education. Course structure and evaluation procedures will be developed under the guidance of experts in the field of education as well as qualified dietitians. The new program will be designed to prepare graduates for positions as hospital dietitians, administrative dietitians, nutritionists, teachers, or research workers. Further information may be obtained from Martha Nelson Lewis, Associate Professor, Department of Preventive Medicine, The Ohio State University, Columbus 10.

Fulbright Opportunities for Next Year. For qualified home economists with a "wander lust," the most recent announcement of grants to be available for the 1962-63 academic year under the Fulbright and Smith-Mundt acts may be of interest. Two full awards and six travel grants are listed for France under the category of "grants unspecified as to field," with the comment that "there is particular interest on the part of French universities in receiving scholars in . . . home economics."

One award in home economics will also be made in Turkey, at the Ege University, Izmir. "The first Department of Home Economics in a Turkish University was established at Ege in 1958-59. Since that time, a Fulbright lecturer has been assigned each year to this department, in which the student enrollment continues to increase annually. Duties of the visiting professor would include lectures to students and advice on curriculum, the purchase of equipment, administration, and so on."

Further information may be obtained by writing: Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C.

The following foods will be in plentiful supply during September, according to reports from the USDA:

Beef
Chickens—broilers and fryers
Turkeys
Last summer vegetables

Frozen Foods for September. For September, the National Association of Frozen Food Packers feels that the following suggestions are apropos:

Frozen fruits

APRICOTS—This fruit, which is both flavorful and colorful, can provide a special fillip to any menu, whether served as dessert or appetizer.

BLACKBERRIES—The crop this year is below 1960, hence is not as plentiful on the market. Thus, inclusion on a menu, in a tart or torte, can offer a 1961 fall specialty in your institution.

RED RASPBERRIES—Serve these berries—plump and bursting with flavor—with breakfast cereal or as topping on ice creams and puddings. On bread or tapioca puddings they are delightful.

RHUBARB—Bake or steam it to serve as an accompaniment for pork—or, make a good old-fashioned rhubarb brown Betty.

Frozen vegetables

BEANS, BOTH GREEN AND WAX—Serve the two together for variety sometimes.

CORN, CUT—Corn in cups of green pepper or red pimiento or in red tomato shells has a taste-tempting appearance.

POTATO PRODUCTS—Serve frozen French fries with fish and steak, and don't forget frozen hash-browns for breakfast.

Government Releases. "Food Stockpiling for Emergency Shelters" is the subject of a twenty-page, multilithed report available from the Office of Civil and Defense Mobilization Region 4, Battle Creek, Michigan. The recommendations presented were worked out by the USDA's Food and Materials Division, taking into consideration nutritional needs, psychologic needs of shelter occupants, palatability of foods, shelf-life, and so on. A level of 2200 calories a day is recommended, which is above a minimum food survival level because morale was considered important. The first table, "Guide for shelter reserve food supply" indicates need-per-person for one day and two weeks for eight food groups. Other tabulations present data compiled for use in stockpiling for shelters in public buildings and business establishments and include: approximate weight, cost per pound, and net storage space needed for 100 servings of eleven selected foods storable for four or more years and of thirty-one other foods which may be stored for two to four years.

"Cheese Buying Guide for Consumers," (USDA Marketing Bulletin No. 17) gives basic facts about both natural and pasteurized processed cheeses and related products. The greatest amount of space is devoted to natural cheese—how it is made, its care in the home, uses, ripening classifications, and characteristics of some popular varieties. One section deals with purchasing of cheese. Single copies may be requested from the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

From the Heart Information Center, National Heart Institute, Bethesda 14, Maryland, comes a new leaflet, "Heart Research News." A compilation of items on recent research findings, it is intended primarily for lay readers and is written in popular style. Most of the items concern studies conducted or supported by the National Heart Institute. This first issue, released in June, will be followed from time to time by subsequent issues.

Gas-operated Super Generator STEAM CHEF. Available with 2 or 3 compartments; 4 or 6 bushel capacity. ASME-approved evaporators, copper heaters, automatic pilots, low water cut-off.

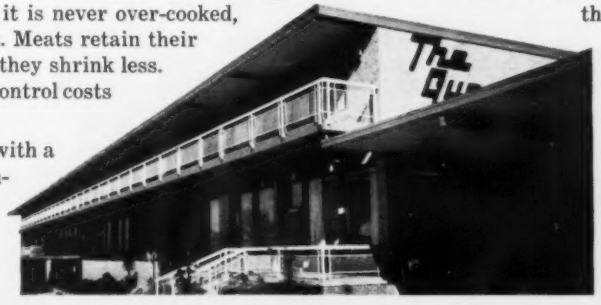
"We get tastier foods, with less shrinkage, with our GAS-operated STEAM-CHEF"

Mr. Holley Midgley, General Manager, THE GUEST HOUSE MOTOR INN, Birmingham, Alabama

"We're proud of the taste and appearance of the foods we serve," says Mr. Midgley, "and we do everything possible to control quality and costs. That's why we do all our steam cooking in a gas-operated Steam-Chef.

"Everything we cook in the Steam-Chef tastes good and looks good because it is never over-cooked, burned or dried out. Meats retain their natural juices, and they shrink less. And, of course, we control costs with thrifty gas."

Put steam to work with a gas-operated Steam-Chef, and get all the advantages of modern gas cooking . . . speed, precise control, cleanliness, safety, dependability and unbeatable fuel economy. You'll cook better, faster, and be money ahead, with a gas-operated Steam-Chef.



For information on the complete Steam-Chef line, call the Commercial Sales Specialist at your local Gas Company. Or write to CLEVELAND RANGE COMPANY, 971 East 63rd St., Cleveland 3, Ohio. *American Gas Association*

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The Heart Information Center will be glad to put your name on its mailing list to receive issues as they are available.

Food Protection Committee Publication. On December 8, 1960, the Food Protection Committee of the Food and Nutrition Board sponsored a symposium on "Science and Food: Today and Tomorrow." The proceedings of this symposium have now been published as National Academy of Sciences—National Research Council Publication 877. In addition, a summary of the papers has been prepared in abbreviated form as a separate leaflet. Papers were presented on: the technologic revolution in agriculture, contributions of science in supplying food for a changing world, the relation of modern food science to nutrition, the meaning of modern food science in developing countries, medical aspects of the modern food supply, safety as regards food additives, and ways the food industry meets consumer demand. Copies of either publication may be ordered from: National Research Council, 2101 Constitution Avenue, Washington, D. C.

Australian Food Booklet. From Australia, we have received a new leaflet, "Eat Better for Less," designed to show how a nutritionally adequate diet may be provided at moderate cost. Attractively designed and printed in two colors, separate sections are concerned with "value for money" for five food groups: milk; meat, fish, eggs, and cheese; fruits and vegetables; bread, flour, and cereals; and butter and margarine. A plan for the three meals a day is outlined, followed by specific menus for inexpensive meals for one week. Packed lunches are given special attention on one page. The leaflet concludes with sections on shopping hints to save money, storage hints, and cooking hints, all designed to achieve economical use of food. Single copies will be sent on request to The Australian Institute of Anatomy, Commonwealth Department of Health, Canberra, Australia.

FAO Report. In 1960, the Food and Agriculture Organization of the United Nations convened a technical meeting in Bangkok to consider nutritional aspects of food policies in Asia and the Far East. A report of this meeting ("Report of the Technical Meeting on Nutrition in Food Policy and Planning in Asia and the Far East—Bangkok, Thailand, 6-13 June 1960") has now been published as No. 28 in the FAO Nutrition Meetings Report Series. Participants of the meeting were concerned with an appraisal of the food and nutrition situation; establishing food consumption targets, both long- and medium-term; factors influencing food consumption and nutrition and obstacles to nutritional improvement; and the need for nutrition organizations and coordination to achieve the goals. This new report covers all of these aspects of the meeting. Copies may be ordered at 50 cents each from International Documents Service, Columbia University Press, 2960 Broadway, New York 27.

Food in the United Kingdom. Figures for 1959 food use in Great Britain have just been released in the Annual Report of the National Food Survey Committee. The energy value of food supplies was almost the same as in 1958 and seemed to be leveling off at about 5 per cent above the pre-war average. Nutrient content of food supplies was above that before the war, but was about the same as in 1958. Consumers' expenditures for food in 1959 were greater than the year before, but the increase represented greater costs for quality, processing, or service, rather than change in nutritional value. Both total and household food expenditure per capita outpaced the rise in food prices, reflecting greater demand for more expensive commodities including poultry, fresh citrus fruit, and processed products, and less use of such staple foods as cereals and potatoes. Data in this report ("Domestic Food Consumption and Expenditure: 1959," available for 8s6d. from H. M. Stationery Office, London) are broken down according to: consumption of various food groups, energy value and nutrient content, household diets of social classes, household diets and family composition, the homemaker's age in relation to household diet, diets in old-age pensioner households, geographical differences in household diets, and other areas. Six appendices are included, two of which deal with food consumption by region and type of area and use of fish.

Institute for Dietary Consultants. At the end of May, an Institute for Dietary Consultants, held in Rock Hill, South Carolina, was sponsored by the Clemson-Winthrop Home Economics Council. Panel discussions, questions, and informal discussions involved the psychologic aspects of consultation service, techniques of consultation, and resources and aids available to dietary consultants. A number of members of the South Carolina Dietetic Association participated in the program. Consultants for the meeting included: Sallie J. Mooring, A.D.A. Project Director, Food Service Supervisor's Program; Dr. Harley A. Scott, Head, Department of Psychology, Winthrop College; and Dr. Katheryn Powell, Associate Professor of Home Economics, Winthrop College.

Interns Graduate. On June 22, graduation exercises were held for eleven dietetic interns completing their year's work at the *University of Minnesota Hospitals*, Minneapolis. The graduates were:

Patricia Ashman, University of Minnesota
Diana Barry, College of St. Teresa
Emily Biggins, Mundelein College
Bennie Clements, Tennessee A. & I. University
Doris Folstrom, North Dakota State Agricultural College
Bonnie Halama, Stout State College
Mildred Jones, Clarke College
Karen Kubicek, Michigan State University
Alfreda Latimer, Tennessee A. & I. University
Eileen Raidl, College of St. Catherine
Joann Sugiharu, University of Hawaii

At the *VA Hospital, Bronx, New York*, eight dietetic interns will complete their work on September 14. They are:

Anne Connaghan, Marywood College
Margaret Dowd, Immaculata College
Maxine I. Hansen, St. Joseph College
Cathrine Miller, Cornell University
Margaret E. Moody, Cornell University
Judith L. Richardson, Russell Sage College
Eleanor Taintor, Russell Sage College
Ann H. Welles, University of Colorado

New Wheat Product. Canned "bulgur"—cooked whole grains of wheat with only the rough outer layers of bran removed—has been developed by scientists at the USDA's Western Utilization Research and Development Division. It has a delicate whole-wheat flavor and practically the same nutritive value as whole kernels of wheat. Only a few minutes' heating in a little water are required before serving. This canned whole wheat is a modern version of an ancient food, for centuries the mainstay of Middle Eastern diets. One of its best known uses is in pilaf, but the new product is said to be adaptable to many dishes, including: vegetable soup, stuffed peppers, curried lamb pilaf, stuffing for roast chicken, Swedish meat balls, tossed salad, Indian pudding, and pineapple bavarian, all of which were served recently at a luncheon for USDA officials and scientists.

This new convenience food in seasoned (pilaf) and unseasoned (bulgur) form is now being test marketed in cooperation with the Kansas Wheat Commission.

News of State Associations

Colorado Dietetic Association. The *Pueblo Dietetic Association* has compiled and published a collection of quantity recipes under the title, "Food Parade." The fifty-three recipes include dishes ranging from appetizers to desserts, with such intriguing names as: "snuggle bunnies," "a career girl's dessert," "green rice casserole," and "cheese French fries." Contributions came from the three hospitals in the city, as well as individual members.

BUT DOCTOR, IS CALCIUM REALLY THAT IMPORTANT?

YES . . . and the importance of calcium is best observed in people who have always enjoyed sufficient amounts of milk. Shape . . . stature . . . locomotion . . . all are dependent upon the support given the body by the skeleton and its main constituent: calcium. Over 99% of this element in the body resides in the bones and teeth where it lends rigidity to these tissues and is stored for future needs. The remaining 1% serves several vital functions . . . in the clotting of blood, the activation of enzymes, and the transmission of nerve impulses to the heart and other organs.

In some areas of the world, low calcium, phosphorus and vitamin D intakes combine to cause growth retardation and bone deformities. Calcium intake must be adequate, along with adequate phosphorus and vitamin D, to treat infantile rickets and adult osteomalacia. Milk and milk products . . . particularly those fortified with vitamin D . . . more than any other food group . . . have been responsible for the infrequent occurrence of these diseases in the United States.

While growing animals are most susceptible to calcium deficiency, a low intake in mature animals can lead to *osteomalacia* . . . a disease characterized by decalcification and fragility of the bones. A deficiency in human adults is most likely to occur in women during pregnancy and lactation . . . when failure to consume adequate amounts of calcium may cause bone depletion in the mother and in the child.

Normal calcium metabolism is dependent upon several other factors, including phosphorus for bone salt formation . . . vitamin D and lactose for efficient calcium absorption . . . and protein for the synthesis of bone matrix. Thus calcium in the diet should be accompanied by all those nutrients necessary for its proper utilization. When milk is the source of calcium, these and other *PLUS* factors will also be provided.

Milk and other dairy foods stand alone in their ability to provide calcium needed for all body processes in a form that is highly palatable, easily digested, and readily absorbed . . . and they also provide other nutrients that contribute to a balanced dietary and buoyant health.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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Delaware Dietetic Association. In May, the Delaware Dietetic Association co-sponsored, with the Lay Society of the Delaware Diabetes Association, a panel discussion on "Diets in the Care of Diabetics with Reference to Calories in Foods." Three dietitians and three physicians made up the panel.

Georgia Dietetic Association. The Georgia Dietetic Association is represented by two members on the Georgia Joint Council on Paramedical Education, a voluntary joint agency established in 1959 by the several associations representing the paramedical field, along with agencies of the state government. A major project of the Council will be a survey of the needs in the state for hospital and health workers in all professional job categories, including an assessment of present educational and training resources. The inventory will include all levels of nursing, medical technology, X-ray technology, medical records library science, hospital dietetics, and other paramedical fields. The survey will be jointly financed by a grant from the Board of Regents of the University System of Georgia and the Georgia Departments of Public Health and Education.

Hawaii Dietetic Association. From March 24 to 26, the Hawaii Dietetic Association participated in the annual Science Fair, at which were exhibited the science projects developed by high school students in the Islands. Four of the projects concerned some phase of dietetics: preserving meat, papain, thiamine in milk, and seaweed iodine. The project on "Papain-Proteolytic Enzyme from Papaya" was chosen the winner in this category.

Illinois Dietetic Association. During the past year, the Continuing Education Committee has urged local groups to form journal clubs. Mildred Bonnell reports that a particularly successful group of about ten members was organized by the *Eastern Illinois Association.* They met twice during the year to discuss a variety of articles from professional journals.

Kansas Dietetic Association. On August 1 to 3, the Kansas Dietetic and Hospital Associations jointly sponsored a workshop on food service supervision at Hayes, Hutchinson, and Emporia. The theme of the program was "Planning for the Second Century."

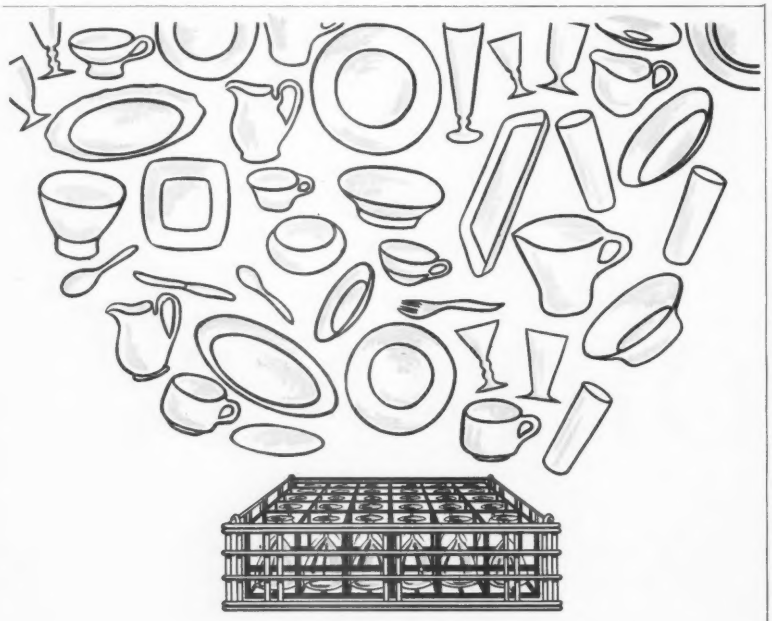
At a meeting of the Executive Board on May 24, it was decided that the Kansas Association should assist financially the dietetic interns at the University of Kansas Medical Center to attend the A.D.A. meeting in September in St. Louis.

Maryland Dietetic Association. A recently completed joint project of the Education and Diet Therapy Sections of the Maryland Dietetic Association has been the preparation of a "Manual for Instructors Teaching Nutrition and Diet Therapy in Practical Schools of Nursing." The material covered includes meal planning and preparation, nutrition, therapeutic diets, and a glossary, as well as a short bibliography.

In an effort to broaden the public relations and career guidance activities in Maryland, the Association has joined a group of allied professions which includes occupational therapists, physical therapists, and others. The dietitians report that this is a very active group in the state and they feel that by pooling resources, much more forceful recruiting programs will result.

Also, through the efforts of the Maryland Dietetic Association, sources for advanced study for dietitians are being established this fall at the Baltimore branch of the University of Maryland, and McCoy College, the night school of the Johns Hopkins University.

Wyoming Dietetic Association. From June 19 to 22, the Wyoming Dietetic and Hospital Associations, the University of Wyoming, and Casper College cooperated in sponsoring a food service supervisor's institute. The program included discussions of modified diets, food preparation,



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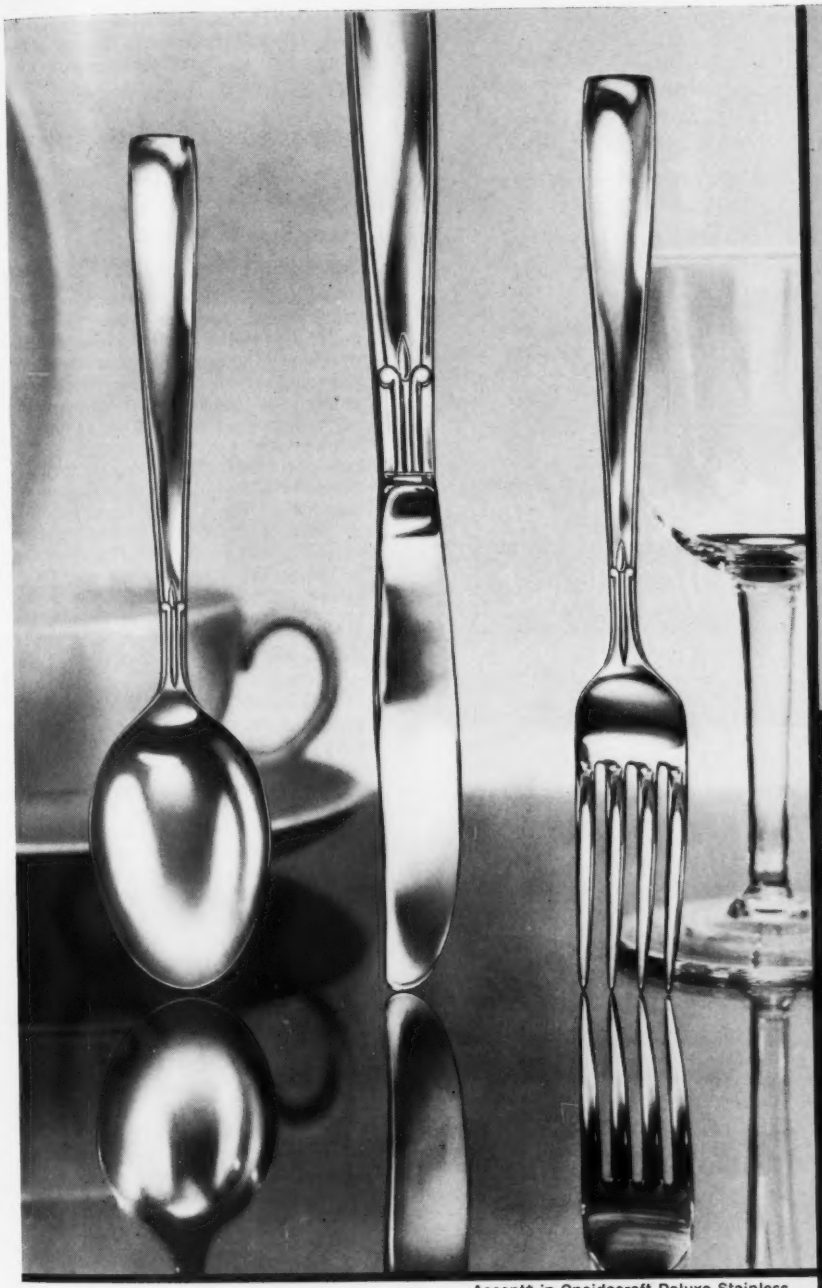

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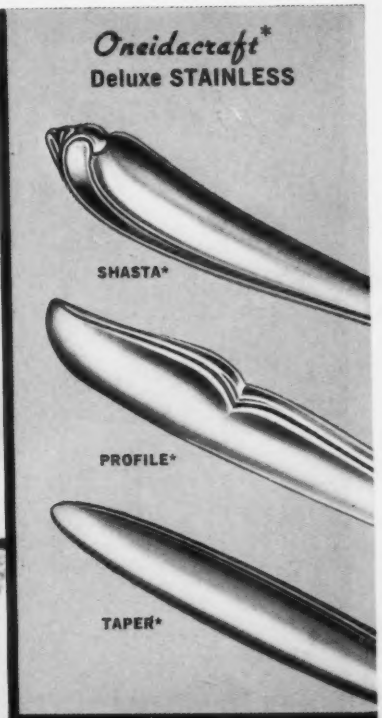

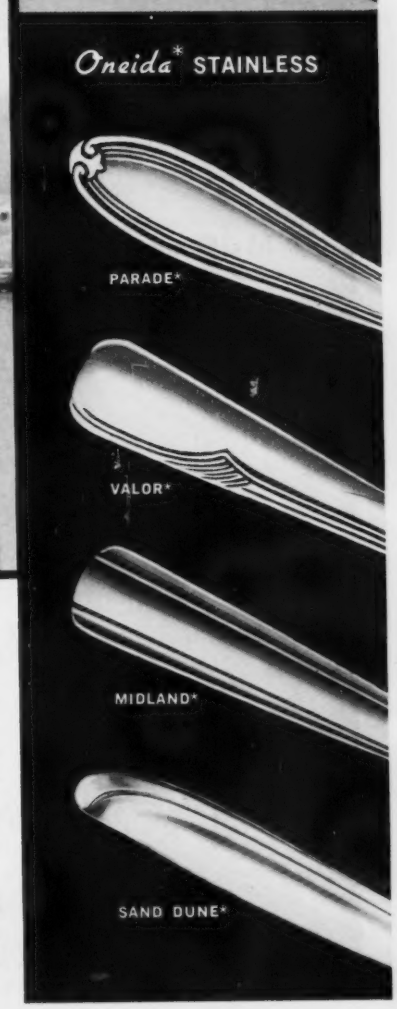

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dietary records, sanitation, operation and care of equipment, menu planning and standardized recipes, and food service.

Career Guidance in the States

By FRANCES W. MARGUT
A.D.A. Career Guidance Chairman

California. Grayce Austin of San Mateo was on her toes to note, and up in arms to challenge the TV program "Careers." Apparently other paramedical professions have had nationwide informational and recruiting programs, presented by recognized authoritative persons under the educational (non-advertising) sponsorship of the Ross Laboratories, Columbus, Ohio. These have been followed by wide distribution, at the expense of the sponsor, of material provided or edited by the professions themselves. Through a four-way correspondence—between Miss Austin, the A.D.A. Career Guidance Chairman, Thelma Pollen of the A.D.A. headquarters staff, and Ross Laboratories—it appears as though a similar program for dietetics may sometime be possible.

New Hampshire has devised an excellent follow-up scheme for scholarship winners. They are asked to attend the annual meeting of the state dietetic association next year and to appear on the program, discussing their experiences and impressions of the profession, when scholastic theory has been implemented by internship experience.

In **North Carolina**, a "Career-o-Rama" was planned by a service organization, with the North Carolina Dietetic Association a participating member, to reach all junior and senior high school students in Charlotte and Mecklenburg County. Altogether there were eighty career booths in the coliseum. The students were required to attend and were transported by school buses. Each preselected three careers which he felt interested him and spent 30 min. at each booth. The last 30 min. was reserved for general visitation of other booths. Altogether about 13,000 students attended in the four days. The career booths were open from 9:00 a.m. until 9:00 p.m., and parents were invited to attend in the afternoon and evening. For the dietetic exhibit, the theme, of course, was "Careers in Dietetics," and an outline was made for the A.D.A. member to use in her 15-min. speech. Then 15 min. were allowed for questions and answers. Two A.D.A. pamphlets, "Look Ahead—the Future is Bright" and "Chart Your Course in Dietetics," were handed out. The Air Force and Army also supplied literature. The dietetic booth consisted of a table

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Of course, Lamb does more than please patients. It eases *your own* task. Makes portion-control simpler, especially with cuts like rolled shoulder and chops. It helps you control costs, too, because the less expensive cuts, like stew, shanks, neck slices and riblets are as delicious as anything you serve. And Lamb is easy to prepare in interesting ways.

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I-65

decorated with a patient's breakfast tray, a display of career guidance literature, and in the background were displayed the A.D.A. seal and the "Tree of Opportunities."

Over two hundred students stopped by the dietetic booth and filled out cards. Eighty-six of these were definitely interested in dietetics and twenty-three signed up for one of the tours to a hospital, school lunch, nutrition clinic, radio or television station, and test kitchen which were made available.

As a follow-up, a letter was sent to the vocational guidance instructor in each school, letting him know that further material and information is available for their libraries at no charge.

The Minnesota Dietetic Association assisted in the tenth annual Home Economics Career Workshop on the St. Paul Campus, University of Minnesota, the theme of which was "Cut Your Golden Record in Home Economics."

All the colleges in the state which offer major courses in home economics participated in the three-day program. About two hundred girls from high schools throughout the state took the opportunity to learn of the advantages and challenges offered by the varied careers in the field of home economics. They also received help and guidance in selecting colleges and courses.

After registering, the students were welcomed at a tea in the McNeal Hall and toured the building and the St. Paul Campus. The next morning, the girls heard talks about career opportunities by qualified home economists in such fields as education, dietetics, equipment, clothing, and others. Then they spent the major portion of the day taking tours of businesses, schools, and hospitals, seeing home economists in action.

By the third morning, they had been exposed to many facets of home economics and given a chance to ask questions about specific colleges or universities they might be interested in attending. They received a booklet of information to take back to their schools and were told how they could effectively relate what they had learned to their fellow students. This year a record about careers cut by Mary Kimball, well known home economist, for the Workshop was given to the girls so that they might play it for other members in their classes.

The Greater Kansas City Dietetic Association participated last spring in the biggest and greatest Health Fair ever held in Kansas City. An educational adventure, the Fair was sponsored by the physicians of the Greater Kansas City Metropolitan Area, and during its run of nine days, had an officially recorded attendance of 101,750.

The Kansas and Missouri Dietetic Associations each contributed $150 toward financing two exhibits sponsored, and manned for a total of 144 hr., by members of the Greater Kansas City Dietetic Association. One booth was on food fads, the other on dietetics as a career. The latter received 582 requests for literature, and many good prospects for future follow-ups.

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Public Relations in the States

By HELEN G. INGERSON
A.D.A. Public Relations Chairman

So often it is difficult to pin point specific public relations activities and projects, for everything done by each member and each committee has public relations aspects—good or bad. Because of this, there is considerable overlapping of interests and a need for cooperation between the committees. Writing or preparing articles is usually the responsibility of the public relations committee. An example of this type of cooperation is the work recently done in **Georgia.**

The Georgia Dietetic Association's Public Relations Chairman has shared with us a "short" on "Career of Dietetics" which she wrote recently. The article will appear in the *Spectrum*, a paper published by members of the Allied Medical Careers, Inc. This newspaper is published by students, is sent to all schools in the state with

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Toledo Disposer provides quick, sanitary disposal of all food wastes. Heavy-duty engineered to assure long, trouble-free service.

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This TOLEDO-equipped kitchen

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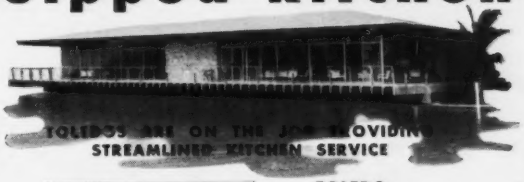

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Wherever large numbers of people dine, gracious service starts in a well-planned kitchen . . . like this one at Ocean Reef Inn, under the swaying palms of Key Largo.

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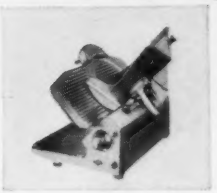

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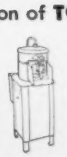

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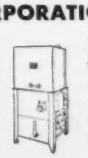

Dishwashers . . . Fast, thorough, dependable. Available in door, counter, conveyor and rackless types. Advanced design, easy cleaning.

Hi-Speed Choppers . . . Powerful, heavy-duty designed. Outstanding in performance and appearance. Full range of models from 1/3 HP to 5 HP.

AMC Clubs, and is read by those interested in medical careers.

The Georgia Dietetic Association will emphasize "Good Nutrition through Weight Control" in its exhibit at the Southeastern Fair this fall. The news releases indicate that the displays, leaflets, and material will deal with all groups—the senior citizen, the adult, the teen-ager, the school child, the preschool child—with respect to planning better and more nutritious meals to achieve and maintain normal weight.

Members of the **Virginia Dietetic Association** recently assisted with the Fifth Annual Nutrition forum sponsored by the Nutrition Committee of the Virginia Council on Health and Medical Care and the Thalhimers Department Store. The theme was "Personal Fitness for Youth in Virginia." Dr. W. H. Sebrell, Jr., Director of the Institute of Nutrition Sciences and Professor of Public Health Nutrition at Columbia University, described "Current Trends in Nutrition for Youth" and E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, discussed "Latest Developments in Nutrition for Youth." Sue Williams, Youth Consultant for Thalhimers and "Miss Virginia" for 1959, moderated a panel of three boys and three girls who explained "We Are Fit as We Are Because . . . " James C. Fox, Director, Department of Health and Physical Education, Lynchburg College, spoke on "The Physical, Mental and Spiritual Needs of Young People."

The forum received excellent newspaper coverage in two Richmond papers. There were four news items on the program before the meeting, as well as four news stories using over 150 in. of space reporting some of the information presented during the forum and a picture of the teen-age panelists. Comments of the panel were most often quoted. For example, one headline read: "Youth Panel Sees Advertising as Way to Aid Eating Habits." One panelist was quoted as saying, "if the advertising world put forth as much effort on milk as they do on soft drinks, milk would be more popular."

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Association Activities

Joint Committee on Rehabilitation. Mary C. Egan, Children's Bureau, Washington, D. C.; Mary Reeves, Children's Bureau, Chicago; and Mary C. Zahasky, University of Oklahome Medical center, Oklahoma City, participated as our representatives at a meeting on June 26 in Cleveland of the AHEA-A.D.A. Joint Committee on Rehabilitation.

UNICEF. The ninth annual meeting and workshop of the U. S. Committee for UNICEF was held May 4 and 5 at the United Nations, New York. Marion Mike, Presbyterian Hospital, New York City, attended as our official representative and gives us the highlights of the meeting.

UNICEF's extensive educational programs in the U. S. for youth and children were reviewed, and it was pointed out that the activities have been an inspiration to other countries. Dr. Georges Sicault, Deputy Director in Charge of Planning of UNICEF, discussed "The Unmet Needs of Children." Considerations in evaluating needs of children include their individual desires and material needs; the kind, amount, and frequency of communication between peoples; the social development and evolution of changes in the family structure and urbanization; education; sanitation; the degree of economic development; and most important, nutritional factors. The low nutritional status existing in many countries was emphasized.

Among the UNICEF educational films and film strips available is a new color film, "Hungry Angels," made by the Institute of Nutrition of Central America and Panama, with the help of WHO and UNICEF. This is a story of malnutrition in Central America, how workers are trying to solve this acute problems, their accomplishments, and the research that has been done. A version in English is being made.

Dr. Abdul Hakim Tabibi, from the Afghanistan delegation and First

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FLORAMA This new exciting panorama of pastel colors blends beautifully with almost any decor.

INTERIOR DECORATORS
Walker's unique facilities can provide you with special combinations from Walker's wide range of shapes and decorator colors. Hand engraved emblems and center decorations are a Walker specialty.

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Vice-Chairman of the 1961 UNICEF Executive Board, reported that before 1959, maternal and child health services and centers were unknown in Afghanistan. By 1959, with the help of UNICEF, the results of the program were encouraging, due to the equipment, dry milk, and technical aid which was given.

Dr. Maria Salvanayagam, Director, Fales Health Center, Devarshigihalli, South India, told of originating a rural health center in 1955. Many malnourished children have been aided, and other standards have been raised in the village through this center. There are some 750,000 similar small villages in India.

Workshop sessions were held. That concerning national organizations pointed out that the backing of UNICEF by national organizations of prime importance and basic to its success.

In October 1959, representatives of seventeen magazines met with teenagers to highlight UNICEF activities. The outcome of this meeting was the formation of "YOU," a youth organization which currently numbers 2000 youth clubs and groups. Educational activities are to be encouraged in junior and senior high schools, colleges, and so on.

The U. S. Committee for UNICEF has a list of educational materials available to organizations and individuals and urges interested parties to write to the United Nations, New York, for a copy. It also urges that United Nations Day be recognized each year by all professional groups. Some departments of dietetics have taken part in celebration of this special day by serving international menus.

Conference on Aging. Some five hundred persons representing various professional, educational, social, political, and service fields in the U. S. met for the fourteenth Annual Conference on Aging at the University of Michigan, Ann Arbor, June 19 to 21. Lorraine Jarvis, University of Michigan Hospital, served as our A.D.A. representative.

One discussion dealt with areas of social needs in health and rehabilitation as they relate to the older citizen. As keynote speaker, Dr. William Hubbard, Jr., Dean, University of Michigan Medical School, pointed out that there is a greater need for knowledge about diseases attacking the older person and a need to create a desire in the community to accumulate this knowledge.

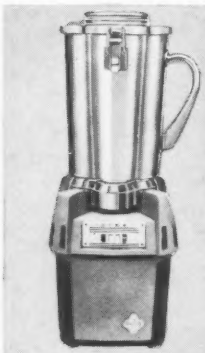
Prominent physicians from the University's Medical School and the community discussed special considerations of hearing, vision, mental health, cardiac rehabilitation, dental health, physical and industrial medicine, public and community health, and health maintenance as they pertain to the elder citizen. Of particular interest were comments by Dr. A. Hazen Price, Geriatric Section, Michigan Medical Society, who elaborated on the four cornerstones of healthful living: (a) having self-interest in keeping well, physically and mentally; (b) establishing good habits of eating; (c) regularly engaging in pleasurable forms of exercise—walking, golfing, gardening—and getting adequate rest; and (d) having "something to do."

A panel of representatives from local, state, and federal governments considered "Practical Aspects of Organizing Services at Various Government Levels." There was a general feeling for a need for action to deal with the increasing number of elder citizens. Political action and financial clearance are vital considerations.

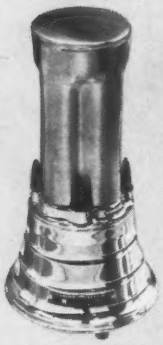
Food Facilities Engineering Society. Beulah Hunzicker, University of Illinois, was our representative at a luncheon of the Food Facilities Engineering Society, May 21, in Chicago. A panel presented various phases of food service planning pertaining to hotels, clubs, and restaurants. The panel highlighted four reasons for a bright future in the food service industry; increase in population, higher average income, more leisure time, and increase in travel.

Following a talk by Dr. Joseph Thomson, Michigan State University, on marketing, two restaurant and hotel students at Michigan State University presented a model of the restaurant of the future and discussed the food merchandising methods involved.

NOW... ***Purée, Liquefy, Grate, Mix, Homogenize to meet diet food, tube feeding and laboratory requirements***



WARING CB-4



WARING LB-1

WARING DL-202

3 NEW WARING BLENDORS®

Give you the quantities and consistencies for every need

FOR MASS FOOD PREPARATION. Gallon-size Waring CB-4 Blendor is specially designed for heavy institutional use. Features life-time lubricated, heavy-duty push-button motor. Easy-pouring stainless steel container and cover. Removable blades for simplified cleaning. Operates on 115 volt AC current. 230 volt model available.

FOR SMALLER QUANTITIES, DIET KITCHENS, ETC. A new, more powerful motor and 37½ oz. stainless steel container make the Waring LB-1 first choice for preparation of smaller quantities where dependability and efficiency of operation are also important factors. Where laboratory use involves highly corrosive materials, a specially built model is available.

FOR EXCELLENT, LOW COST PERFORMANCE. Many institutional users find this finest home-use model meets their requirements perfectly. A two-speed unit, it features the high torque 115 volt AC motor that assures ample blending power for practically any job. Comes complete with two-piece measuring cup lid and convenient detachable handle. Model DL-202.

FOR COMPLETE INFORMATION, WRITE:

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A Subsidiary of Dynamics Corporation of America

American made by American craftsmen... to help the American economy

DISPENSING PROBLEMS?

Lowerators are the answer

Why AMF LOWERATOR?

- Because AMF developed and perfected self-leveling LOWERATOR Dispenser Systems
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- Because AMF LOWERATOR continues to lead with new models and product improvements
- Because of LOWERATOR experience, "know how" and reputation gained in two decades of supplying the solutions to clean dish handling problems

Whatever your needs . . . mobile or in-counter dispensers for dishes, cups and saucers, glasses, trays . . . refrigerated units for milk, ice cream, butter . . . heated models for keeping dishes and cups at ideal serving temperatures . . . AMF LOWERATOR Dispensers mean the end of your dish dispensing problems.

Your Food Service Equipment Dealer can help you plan the AMF LOWERATOR Dispenser System to solve *your* dish handling problems. Call him or write the LOWERATOR Division, American Machine & Foundry Company, AMF Bldg., 261 Madison Avenue, New York 16, N. Y.

AMF LOWERATOR®... there *is* no equal

LOWERATOR is a registered AMF trademark for the original, proven, self-leveling dispenser system. *© AMF Co.*

The need for the scientific approach to food service operation is greater than ever because of increasing costs and the number of health and other regulatory codes. A restaurant operation is dependent on the right person as the operator, the right facilities, and the right location. Personality is very important is business. There was a discussion on planning food facilities, with emphasis on developing the objectives, then planning the dining area, followed by consideration of kitchen planning.

Obituaries

Correction. In the April 1961 issue, the JOURNAL published a notice of the death of Mary Elizabeth Proctor Gilpatrick. We have learned that the notification, although verified, which the A.D.A. office received was in error and applied to a member of Mrs. Gilpatrick's family. Mrs. Gilpatrick is currently making her home in Rock Hill, South Carolina. The JOURNAL and the Association wish to express our regrets to Mrs. Gilpatrick for such an error.

Catherine Swanson Cooper. The Association has been notified of the death on July 10 of Catherine Swanson Cooper in Pasadena, California. Mrs. Cooper had been a member of the Association since 1933 and a life member since 1945.

Nellie Gertrude Huffine. Word has been received of the recent death of Nellie Gertrude Huffine in Clinton, Oklahoma. At the time of her death, she was on the staff of Oklahoma General Hospital, Clinton. She had also served on the staffs at the University of Chicago Clinics and the Illini Union Cafeteria, University of Illinois, Urbana. She had been a member of the Association since 1952.

Elizabeth Moore Ricker. The A.D.A. headquarters office has received notice of the death on June 23 of Elizabeth Moore Ricker in Detroit. Mrs. Ricker, who had been a member of the Association since 1946, had formerly been on the staffs at New England Baptist Hospital, Boston; Grace Hospital, Detroit; and Roger Williams General Hospital, Providence, Rhode Island.

Cup Rack

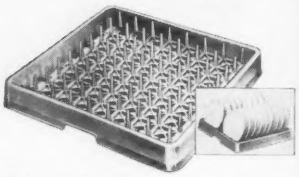
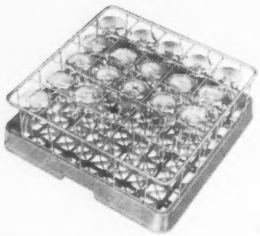


Plate and tray Rack


Goblet or Tumbler Rack

All-Purpose Rack

GUARANTEED TO OUTLAST ANY OTHER RACK OR YOUR MONEY REFUNDED!

RABURN® RACKS PATENTED

For All Dishwashing Machines!

• **30% Less Cost** Each rack costs less, yet fewer racks are needed.

• **40% Less Space** 40% less space to hold as many cups as wire racks.

• **70% Less Weight** Raburn Racks weigh 70% less than wire racks.

(Figures based on comparison of our all-plastic rack with plastic coated compartment wire cup racks)

FREE OFFER!

Try 12 Racks

(any combination of models) at no expense to you. If not completely satisfied within 30 days, simply return.

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We will try—at no obligation to buy—the following Raburn Racks: ___ Cup Racks, ___ Plate Racks, ___ All Purpose Racks, ___ Goblet or Tumbler Racks.

Name_____

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News of Products and Services

For operations which need compact, economical, supplementary storage and dispensing equipment, *American Machine & Foundry Company* has designed a new mobile Lowerator Dispenser, Model AL-3. Cups, glasses, or trays can be loaded at the dishwasher and wheeled to service points without rehandling.

A new bussing Caddy introduced by *Caddy Corporation of America* has been designed with two hinged doors to hide unsightly soiled dishes being conveyed through the dining to the kitchen area. The doors are of fibreglass with magnetic door catches. Two models are available, T-214 for four dish boxes and T-212 for two dish boxes. Both are of stainless steel construction with swivel-type casters to handle easily through narrow aisles.

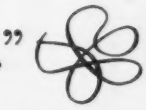
Easily prepared gravy in quantity is ready to serve "as fast as water boils" with a new product, "Soup's On" from *Universal Foods Corporation*. A pound of the gravy base yields a gallon of brown gravy with a real meat flavor.

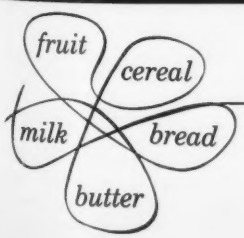
Hayden House Foods Company has introduced a new fully cooked and frozen turkey breast. The rib-cage has been removed so that the meat can be carved right down to the bone. Wrapped in gold foil, the meat is ovenready. "Roast-It" Cooked Turkey Breasts are packed four to a case, individually boxed . . . *Hayden House* also offers a new boneless, fully cooked, and frozen SOL-ID PAK Turkey Roll to the institutional market. The 7-lb. roll is available with all white breast meat or mixed white and dark meat (70 per cent breast, 30 per cent thigh) . . . A ready-to-carve cooked, frozen beef roll is also available from *Hayden*. The roll lends itself to beef sandwiches, plates, or barbecued beef.

Van Brode has introduced a new,

11th ANNUAL NATIONAL BETTER BREAKFAST MONTH

Nation-wide event September 1-30

a coffee break is good but breakfast is better! • youthpower leaders say, "set the pace of your own program by always having a good breakfast."  • better breakfasts help keep you physically and mentally fit. • better breakfasts mean better grades and better attitudes. • a basic cereal and milk breakfast is just as nutritionally efficient as a bacon and egg breakfast. • a basic cereal and milk breakfast is moderately low in fat and well balanced. • better breakfast school and community programs are planned now... 1961 breakfast source book now available. •



CEREAL INSTITUTE, INC.

135 South La Salle Street, Chicago 3

A research and educational endeavor devoted to the betterment of national nutrition

completely tape-sealed, individual dispenser carton for plastic spoons, forks, and knives. The new "Handy Dispenser Carton" complies with health department regulations governing the use of disposable tableware.

A compact, all-purpose floor model food mixer is offered by *Universal Industries.* The 22-qt. capacity mixer combination of bowl and beater whips 17 lb. potatoes in 2 to 3 min. or 24 lb. of bread, cake, or pizza dough in 7 min. Lighter batches can also be handled smoothly. Constructed of heavy duty steel and cast iron in gray or white enamel finish, the mixer has a ⅓-h.p. motor with variable speeds ranging from 105 to 360 r.p.m. Speeds can be changed without stopping the motor. A combination on-off switch and timer can be pre-set to shut off at a desired time. The special swing bowl action permits easy loading and unloading and changing of beaters without removing the bowl from the mixer unit. With a special adapter, other makes of attachments can be used with the mixer.

Universal Industries, Inc., announces two new stands and a mobile cart. For food machines where mobility is unnecessary, Univex stands have been designed to give firm, rugged support. Most models are adjustable in height, with storage or utility space below in drawers, cabinets, or shelves. A mobile stand especially designed for peelers, Model 200, wheels to the sink for instant use, requires no lifting, and requires no counter space.

A floor model automatic, volume vegetable peeler with a peel trap base in a permanent installation is offered by *Universal Industries.* Twenty lb. vegetables can be peeled in 1 min. A pre-set timer automatically guards against costly over-peeling. The unit can be rotated on its base to discharge in any selected direction. Powered by a ⅓-h.p., 115-volt AC motor with silent belt drive, the abrasive peeling disc operates by friction-type tumbling action. A water inlet, with standard 2-in. drain connection, washes the interior of the peeler and floats away the waste into the peel trap base.

An anti-bacterial, deodorant soap containing the bacteriostat called "TCSA" (tetrachlorosalicylanilide) has been named "Coleo" by *Colgate-Palmolive Company.* Lemon yellow in color, the 1-, 1½-, and 3-oz. cakes are unwrapped. This soap lathers freely in hard or soft, hot or cold water, reduces skin bacteria and offensive odors, yet is mild.

Insinger Machine Co., announces a newly designed, "square look" automatic, single-tank, door-type dishwashing machine. The "Commodore 15" features all-welded cove and radius hood construction; a one-piece tank that is self-draining; door suspension to facilitate raising and lowering; and new sanitary sealed box legs. The unit will service up to 250 diners per meal.

"Soup's On" Chicken Soup Base with Roasted Chicken Meat, a product of *Universal Foods Corporation,* combines taste and economy. It may be used as a soup or an extender for chicken à la king, gravy, or wherever chicken flavor is desired. One lb. makes 4 to 5 gal. soup at a cost of 2 cents for a 6-oz. serving.

Two new "Seqlene" brand sequestrants are available in commercial quantities from *A. E. Staley Manufacturing Co.* Seqlene Fe-900 and Fe-1300 are now produced in two liquid series and one dry form. Because of their effectiveness in strong alkaline solutions, sequestrants have found application in alkaline derusting and cleaning and in treating hard or rusty water. Calcium, magnesium, and metal ions as aluminum, copper, nickel, manganese, cobalt, zinc, and silver are also sequestered. Generally, the sequestrants are used alone with alkali, or with alkali plus a wetting agent.

Bakers Pride Oven Co., Inc., announces a new, heavy-duty, two-deck electric pizza oven, Model L02E, designed to fit into backbar or counter space. The unit will bake up to twenty 16-in. pizza crusts an hour. The oven may also be used as an auxiliary or for keeping pizzas warm in a take-out service operation. Three tubular heating elements, removable transite

Let CREAM OF RICE help solve your modified diet problems

1

EXTRA NOURISHMENT

Cream of Rice is rich in Iron, plus Vitamin B_1, Riboflavin and Niacin.

New Medical Study proves that Cream of Rice is *easier to digest than any other kind of cereal.* Gives quick food energy, too—within a few minutes after eating. Many pediatricians recommend it for growing children—and as one of baby's first solid foods.

And many doctors recommend Cream of Rice in modified diets for food allergies, ulcers, high blood pressure, hypertension, intestinal distress and digestive troubles.

2

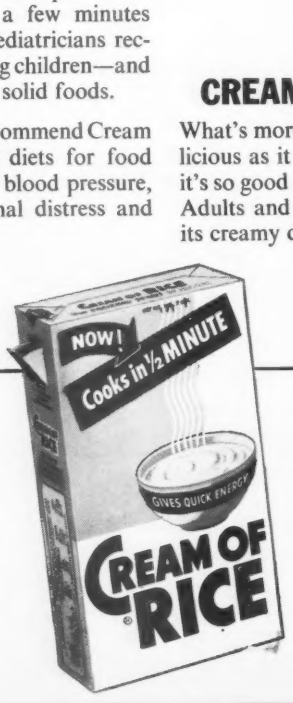
EASY TO PREPARE

Cream of Rice, a delicious, nourishing, easy-to-digest cereal, cooks in just ½ minute! New, easy-pouring spout!

3

CREAMY RICE TASTE

What's more, Cream of Rice is as delicious as it is nutritious. That's why it's so good as a breakfast cereal, too! Adults and children alike will enjoy its creamy deliciousness.



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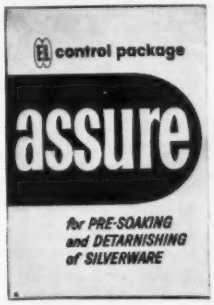
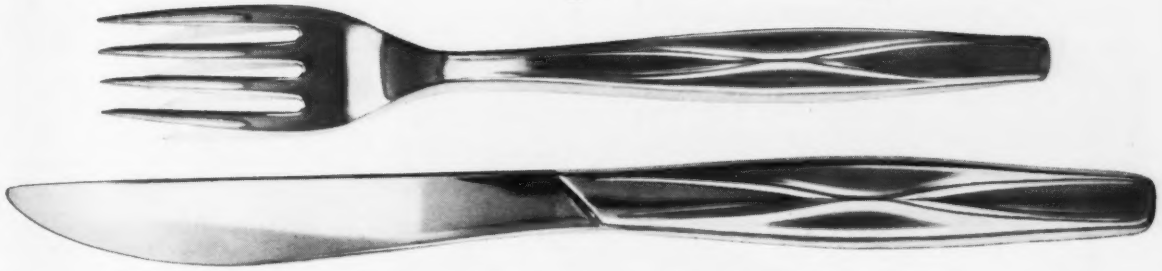
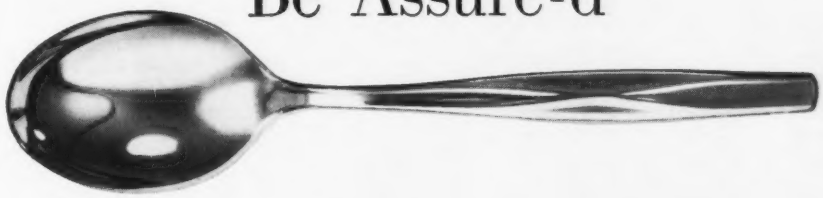


What a difference pre-soaking makes!



Be "Assure-d"



your tableware always shines like this!

ASSURE is your insurance of a dazzling first-impression on your customers! No need for streaked tableware, when it's so easy to brighten silver and stainless ware to a high sheen by a *quick pre-soak in* ASSURE—before washing. ASSURE reverse-ionization gives the same detarnishing effect as frequent, time-consuming hand-burnishing! In addition, ASSURE completely loosens even the stickiest food soils, so that they wash off easily in the dish machine. Yet ASSURE is completely harmless to hands and to silverware.

ASSURE is only one of Economics Laboratory's many products to better your dishwashing operation . . . resulting from a research program that keeps EL the leader in this field. It will pay you to have a *free analysis* of the special needs of your dishroom operation from a trained EL consultant. Send this coupon today.

What a difference it makes to soak tableware briefly in an ASSURE solution, before placing in the dish machine.

Economics Laboratory, Inc. JAD
250 Park Ave., New York 17, N.Y.
Gentlemen.
I am interested in sparkling tableware, and improving my dishroom operation—with the advice of an EL Dishwashing Engineer. (At no obligation to me.)

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EL ECONOMICS LABORATORY, INC.
250 Park Ave., New York 17, N. Y.

EL *"The first, with the newest, through original research"*

hearths for ease of cleaning or pan baking, a 700°F. thermostat, and a 15-min. bell-timer are standard in all units. Units are available in bakertone gray or stainless steel.

A five-warmer model and a one-warmer unit Bunn-Omatic coffee brewer are offered by *Bunn Capitol Company*. A gravity drip extraction method distills only the most flavorful coffee oils. Coffee dropped into a disposable filter cup, then placed in the cone, is brewed in 3½ min. by the touch of an electric button. No washing or rinsing is necessary. Continuous and automatic water aeration prevents tank staleness. One hundred and fifty cups of coffee an hour may be brewed in the five-warmer unit, 140 cups, or 12 cups every 4½ min. in the one-unit warmer.

A combination refrigerator and heat cabinet for food on racks has been introduced by the *C. Schmidt Company*. The unit is available in two-, three-, or four-sections with a capacity of thirty-one pans in each section. Temperatures can be maintained in the refrigerated section as low as 38°F., and in the hot section to 200°F. The hot sections are controlled by a thermostat. The unit can be placed on an existing floor without an insulated bottom, eliminating the need for recessing the base to provide a floor flush with the building floor.

DCA Food Industries Inc., announces a new honey bran muffin mix packaged in 5-lb. bags, making it unnecessary to measure. Just add water, mix, and bake 30 min. Muffin variations can be made by adding fruits, mince meat, or raisins. Other muffin mixes are: "fancy," bran, and corn.

B. H. Hubbert & Son has introduced an electric, steam-jacketed kettle to be wall-mounted at any practical height. There are no exposed pipes under the kettle to accumulate soil. Heat is regulated by themostatic control at temperatures from 70° to 250°F. The kettle is equipped with a compression-type faucet; a 2- or 3-in. faucet for quick discharge of stews, chowders, puddings, diced or creamed potatoes, or other bulk foods is optional. The kettle is available in 20-, 30-, 40-, or 60-gal. capacity.

Beef and pork, eggs, a touch of onion, and a dash of allspice are combined in the new 1-oz. frozen meat balls now being marketed by *The Rath Packing Company* They are packaged in 10-lb. units containing 160 meat balls.

A new multi-purpose food service brush, "Atlas," has been announced by *Sparta Brush Company*. The oval, two-sided shape holds the bristles at a forward angle, providing more concentrated scrubbing power over a wider, flatter surface. The white Dupont tynex nylon bristles are anchored in sturdy tufts and crimped to hold more water. They will not damage stainless steel or polished finishes. The handle, grip, thong, and block are "soak-proof." Over-all length is 16 in.; a 30-in. length is available; the double-surfaced head is 6 by 5 in. wide. The brush is recommended for cleaning coffee urns, soft ice cream cylinders, stock pots, steam kettles, and other utensils.

A new condiments-and-silver mobile Caddy is announced by *Caddy Corporation of America*. Six 2½-qt. removable stainless steel jars with rounded and coved corners are provided for condiments, and four large removable compartments hold 40 doz. pieces of silver. The covers for condiments are designed to hinge upright, in a stay-open position for service, and for easy removal. A double-hinged fiberglass cover on the silverware section folds back to expose only the handles of silverware. A tray rest provides space for two cafeteria trays. This Caddy is made of stainless steel, is mounted on ball-bearing swivel casters, and is equipped with two brakes. *Caddy Corporation* also manufactures a condiment Caddy without the silver compartment of the same design. . . . Another new mobile Caddy is designed for use with cups, glasses, or dishes. The undershelf provides space for storage of empty trays. The unit can be wheeled to an undercounter position.

Two new cubers, Model SC-300 air-cooled and SC-300W water-cooled, and an allied bin BH-650 have been especially designed for moderate users of ice by *Scotsman*. Compact and func-

Eliminates the hood . . .
Ends "greasy spoon" cooking!

PLEDGAIRE™ VENTILATION

Patented PLEDGAIRE ventilation features ultra-modern shelf design . . . captures and removes excess heat, greasy air, fumes, smoke, odors right at their source before they can spread. Tasty freshness of the food is preserved — no chance of 'hash house' taint. Cooks are inspired by light, clean, refreshing PLEDGAIRE atmosphere. Other PLEDGAIRE advantages include:

- Draft-free air movement — engineered for maximum cooking efficiency . . . does not cool food.
- Minimum maintenance with easy to reach washable filters.
- Reduced cleaning and decorating costs.
- Improved air conditioning efficiency.
- Superior sanitation.
- Maximum fire safety.

PLEDGAIRE costs no more than ordinary, less effective hood installations . . . requires no structural alterations or special provisions . . . ventilates any equipment in any kitchen.

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How fresh Sunkist lemons can help overcome

the palatability problem in restricted diets

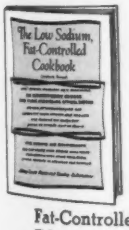
The relative unpalatability of special diets often leads to dissatisfaction and even "cheating." The juice of fresh Sunkist lemons has been found most useful in improving the palatability of these 3 common regimens:

1. ***Weight Reduction Diets***—Many dieters find that a dash of fresh Sunkist lemon juice makes a tasty substitute for fattening sauces and dressings. Only 4 measly calories per tablespoonful.

2. ***Low Sodium Diets***—A squeeze of fresh Sunkist lemon compensates for the lack of salt and livens up the flavor of meats, fish, vegetables, etc. Virtually free of sodium, Sunkist lemons have a generous supply of potassium.

3. ***Bland Diets***—A little fresh Sunkist lemon juice adds a lot of zest to a wide variety of foods, helps dieters tolerate better the absence of spices and seasonings.

Sunkist *fresh lemons*



Special Offer!

"The Low Sodium, Fat-Controlled Cookbook—Special Sunkist Edition," by Alma Smith Payne, and Dorothy Callahan, former research dietitian, Massachusetts General Hospital, with introduction by Francis L. Chamberlain, M.D., M.Sc.D. Valuable guide for low-sodium patients. 480 pages, hundreds of recipes. Available from Sunkist at special price of only $1.50 (regular edition $4.00).

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I enclose a check or money order for $____(send $1.50 for each copy ordered).

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tional, the SC-300 series occupies 8 sq. ft. floor space when used in conjunction with the new bin. Both models produce up to 300 lb. cubes per day and are available with or without an integral ice crushing component with crushing capacity up to 30 lb. per min.

Scotsman is also introducing a new super flaker, Model SF-5F, with a daily ice making capacity of 2000 lb. The unit is equipped to give a continuous flow of flaked ice at the flick of a switch and occupies only 5.4 sq. ft. space.

Melamine dinnerware in a "Regal Decorated" pattern in cardinal red and royal blue bordered with gold has been announced by *Plastics Manufacturing Company*. The gold will not wear away because it and the color are molded into the melamine.

A new formula in pudding and pie fillings developed by *Universal Foods Corporation* cuts preparation time from the usual 4 hr. to 1 hr. Light, yet full-bodied in texture, the pudding is smooth and creamy, never develops a "rubbery" skin. The puddings and pie fillings are vacuum packed in three sizes. The puddings and pie fillings may also be used for cake fillings, eclairs, and parfaits.

Cakes from *Sara Lee, Inc.*, are now being made available to institutions. The first product for nationwide distribution is a 2-lb. cream cheese cake made from fresh cream cheese with a Graham cracker crust and sour cream topping. The crust is never soggy and does not crumble when cut. The 9-in. aluminum foil baking pan has a hole in the bottom covered by a corrugated liner permitting the food operator to push the cake out from the bottom without damaging its appearance; the cake can then be cut on the liner. Try a fruit topping of strawberry, pineapple, or cherries on this cake.

The *United Fresh Fruit & Vegetable Association* has prepared a chart showing net weights of fresh produce in principal types of containers delivered to institutions. This four-page bulletin covers twenty-four categories of fruits and thirty-nine vegetables. In addition, the net weight of a bushel is given for each commodity wherever possible, enabling the buyer to make an approximate weight check of produce received. The chart, "Net Weight of Fresh Fruits and Vegetables in Containers Delivered to Institutions" is available for 25 cents a copy.

A coffee brewer for Maxwell House and Yuban soluble coffee has been developed by *General Foods* for the food service industry. The machine requires only 13 in. of counter space, is 24 in. deep and 28½ in. high. To operate, the first of eighteen linked packages (each containing enough coffee to make one decanter of coffee) is threaded on a loading wheel. By depressing a lever for 3 to 5 seconds, the brewing cycle is started. The brewer automatically empties the contents of one package of coffee into a waiting decanter and mixes it with preboiled water. Average brewing time is 3 min. As the cycle is completed, the next of the linked packages is automatically positioned to make another decanter of coffee, and the empty package is dropped into a collection bin. No urn bags, filter papers, or cloths are used. The brewer can also deliver boiling water for tea, hot chocolate, soup, or other foods. The eighteen linked packages of powdered coffee permit the making of 198 cups coffee before the machine must be reloaded, while the speed of the machine allows brewing of 300 cups an hour. The brewer may be set to meet regional preferences at 56-, 60-, or 64-oz. water per bowl. The special Maxwell House and Yuban blends are packaged in laminated kraft paper, polyethylene, and aluminum foil to provide maximum protection.

W. H. Frick, Inc., has introduced a new stainless steel dish carrier with removable plastic-coated shelves and back partitions to cushion dishes and provide quieter operation. The unit has large capacity and is easy to clean. It is available open, enclosed, or heated.

Kathryn Bele Niles has been appointed Consultant to the General Manager, *Poultry and Egg National Board*, and Bernice Stilwell, formerly Assistant Director, is now Director,

all eyes are on the BIG "I"
Insinger
DISHWASHING MACHINES

ADMIRAL 120-5
BIG "I" EXCLUSIVE 14 GAUGE DEEP DRAWN COVE CORNER TANK

All new welded cove and radius corner hood design.
The Admiral 120-5 single tank automatic conveyor Dish Washing Machine serves 200 to 400 persons per meal and features NEW DESIGN FOR THE SIXTIES. Wide die-formed cleanout and inspection door offers easy accessibility. Other advantages include simplified cleaning and maintenance, stainless interior and NI 412 nonferrous nickel alloy castings. Write for literature today on an Insinger Dish Washing Machine designed to solve your dish pantry problem.
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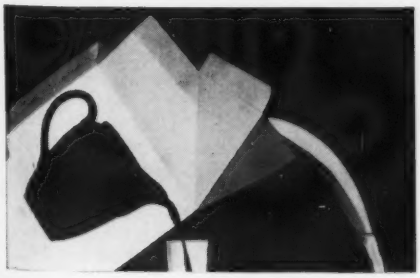
PURE-PAK CARTONS ARE STERILIZED INSIDE AND OUT JUST SECONDS BEFORE FILLING



The only milk package with a built-in pouring spout...pours like a pitcher.

Visit your nearby Pure-Pak-equipped dairy. Watch the amazing Pure-Pak machine automatically form the carton from the paper blank, sterilize it both inside and out, and moments later fill it with milk and seal it. Can there be any doubt that Pure-Pak is the most sanitary of all containers? Consider, too, another obvious sanitary advantage: the carton is used only once, only for dairy products, only by you!

Lightweight Pure-Pak cartons are easier to handle, require less refrigerator space. Bottle washing and storage problems are eliminated. So, too, is breakage. And the handy half-pint size keeps cafeteria lines moving, with no tie-ups.

If your cafeteria, restaurant, school or hospital has not yet joined the legions of Pure-Pak users, do so now. Ask your dairy supplier to start Pure-Pak delivery.

Pure-Pak
YOUR PERSONAL MILK CONTAINER

28 MILLION TIMES A DAY, IN 30 COUNTRIES, SOMEONE BREAKS THE SEAL ON A FRESH PURE-PAK CARTON

Department of Home Economics, filling the vacancy created by Mrs. Nile's promotion.

Orange marmalade is new in *Continental Coffee Company's* line of individual portion jams and jellies. One-half-oz. portions are packed in crystal clear, plastic cups with easily removable covers. Four corners of the cups have been cut away, making any side of the top easily gripped for lifting. The cup is round for easy removal of the contents. The marmalade is packed in cases of ten trays, each holding twenty portions.

A liquid chicken soup is the latest addition to the vending products line of *Continental Coffee Company*. Real chicken taste and full aroma are features of the reconstituted soup. Mixed with hot water in the vending machine, 1 oz. yields broth in the standard 6-oz. hot cup. The *Continental* container holds 50 oz. of the concentrate.

Completely adaptable for any crushed-ice beverage vending machine, *Continental's* Liquid Vending Tea of popular blends of pekoe and orange pekoe teas contains both sugar and lemon flavoring. A special additive assures keeping quality. The tea does not become cloudy on chilling. The sirup is sold in 1-gal. glass bottles. One oz. sirup provides 1 cup tea.

Best Choice for Quantity Cooking
Vollrath Stainless Steel
WITH SMOOTH, THICK ALUMINUM-CLAD BOTTOMS AND FLAT STACK COVERS!
STOCK POTS IN 7 SIZES
8–12½–16–20–24–40 and 60 quart
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Cook and store in the same sanitary utensils

Solid Stainless Steel Body

Aluminum on the bottom, outside

Cook faster! save flavor! cut costs! with Vollrath heavy duty 18-8 stainless steel stock pots and double boilers for quantity cooking. They last for years without replacement—offer maximum sanitation—and at our low prices they cost no more than stock pots made of other metals.

heat quickly • cook evenly • no warping • non-tarnishing • easy cleaning

Stainless steel utensils for every cooking need

Vollrath SINCE 1874

THE VOLLRATH COMPANY • SHEBOYGAN, WIS.

Lincoln Manufacturing Company, Inc., is offering to the mass feeding market a portable unit, "Port-A-Serv," that stores and serves a complete menu in standard 2000 series steamtable pans. Two 2½-in. deep, full-size pans, plus one 4-in. deep, full-size pan and one 14 by 18 in. tray—or one 6-in. deep, full-size pan, plus one 4-in. deep, full-size pan and one 14 by 18 in. tray—can be accommodated. The lower storage area is individually heated and comes equipped with *Lincoln's* combination tray or pan clip. The "serving top" area will hold one full-size, 4-in. deep pan or its equivalent in 1/6-, ¼-, ⅓-, or ½-size pans. It may also be used to store and transport foods. Temperature of the upper area is thermostatically controlled and features a seamless hot food well with perimeter heating design. Port-A-Serv is made of stainless steel, is "Rigid Therm" insulated, and has four carrying handles.

Raetone Commercial Refrigerator Corp. has redesigned and created a modern new line of reach-in and under-counter refrigerators, freezers, beverage coolers, and water stations. The new design complies fully with the new National Sanitation Foundation standard. Innovations include 4 in. of insulation instead of the customary 3 in.; rounded interior corners for cleaning convenience; heavy-duty shelf and pan-slide supports; tubular 6-in. adjustable legs as standard equipment; electric condensator vaporizer to eliminate floor drains and unsanitary drippings; completely automatic defrosting; and self-closing hinges and magnetic catches on the doors.

Paul F. Kraeft, Inc., has introduced a new burnisher, Model 12-24, for volume feeding operations with a seating capacity of up to 800, or where the inventory is 4000 pieces of flatware. The machine is also recommended for all holloware up to 10 in. in diameter. The burnisher has a solid bronze barrel and is driven by a ⅓-h.p. motor. Adjustable dividers form one to eight compartments. The unit is available in either stationary or portable models. Two-hundred-lb. steel burnishing balls, 50 lb. soap, three dividers, and a magnet are included.

A handy calculator which enables food operators to figure food profit mark-ups accurately is available from *Continental Coffee*. Working like a slide rule, but more simply, the selling price per serving, based on the per cent of profit desired, can be determined in one setting.

A file of fifty recipe cards for quantity recipes ranging from soups to appetizers may also be requested from *Continental*.

A thirty-four-page booklet, "Breakfast Source Book" has been issued by *Cereal Institute, Inc.* Two chapters, "Scientific Breakfast Studies" and "Breakfast in the Modern Reducing Diet," have been revised to include recent findings of the Iowa Break-

Oatmeal breakfasts are naturally nutritious—good nutrition helps speed recovery after "flu" or colds

Quaker Oats and Mother's Oats are the same fine product.

When you recommend hot Oatmeal, mother will remember that it is a *naturally* nutritious food, rich in protein, thiamine and minerals. She knows it makes a breakfast the patient will enjoy. And she knows this is precious extra care which only mother can provide.

Each ounce of Quaker Oats provides 110 calories, 16.7% protein, 6.9% fat, 62.4% carbohydrates, and 1.5% roughage (crude fiber). Quaker Oats with milk contributes substantially to the dietary allowances recommended for thiamine, riboflavin, niacin and iron. Rich in phosphorus, low in sodium, it is unsurpassed in dietary usefulness.

For additional information write: Medical Service Dept.

The Quaker Oats Company
CHICAGO 54, ILLINOIS

Write for New Booklet, "Why Oatmeal is Naturally Nutritious"

fast Studies. In the first two chapters, the difference between the hearty breakfast of colonial times and current practices is discussed. The chapter on what constitutes a good breakfast from the standpoint of health and nutrition and a basic cereal-and-milk breakfast pattern is supplemented with tables of the nutritive values of these foods, the Recommended Dietary Allowances, and the nutritional contribution of a basic cereal-and-milk breakfast. A moderate low-fat breakfast pattern and breakfast in school and community health programs conclude the study.

Paper table appointments from *Aatell & Jones, Inc.*, include a tray Cover-of-the-Month plan, a new series of tent cards, and note paper sets. The tray cover-of-the-month offers six sets of tray covers in four designs. To be used for one meal each day, the covers feature two series each on famous Americans, American foods, and American folklore. The tent cards are offered in seven designs with a wide choice of imprinting options. They have also been adapted for use as note paper: sixteen assorted folders and sixteen envelopes.

A newly designed, semi-automatic, rack-type dishwasher by *The Hobart Manufacturing Company* eliminates chains, pulleys, and door weights, inside and out; doors are spring counter-balanced. Controls—door lift, switch control, and drain control handle—are centralized within an 18-in. "Time-Saver Triangle." The unit is powered by a 1-h.p. motor. Other features are a high-velocity pump; a new cam-type actuated drain valve; overflow cover; two wider and deeper strainer pans; removable stainless steel rack tracks; and control and timer box. The unit fits into less space than a phone booth. . . Another model, AM-9, is designed for straight-through operation, with inspection doors. Only sealed eye-level thermometers remain on top of the machine.

Hobart has also introduced a power dicer attachment to operate on mixers and food cutters. Three interchangeable grids and rotating knives permit ¼-, ⅜-, and ½-in. dicing of vegetables and fruits. A special extension shaft and deflector replaces the rotating knives to permit fast cutting of French fries and carrot sticks. The dicing action works by applying light pressure on the handle and engaging a pusher. The product slides forward into the cutting frames, allowing length-wise cutting.

A small, all-purpose mixer, Model A-200-F, to be used with a pedestal where space is a problem, has been designed by *Hobart* to operate a wide range of attachments as well as for normal mixing and beating operations. Capacity includes 15 lb. mashed potatoes, 8 qt. pancake batter, 27 lb. bread or roll dough, and 20 lb. layer cake.

A four-page folder from *Sunkist Growers*, called "Citrus Garnishes," gives instructions for making cartwheels, butterflies, bow-ties, wedges, boats, and flower garnishes from citrus fruits. All are pictured with suggestions as to which accompaniment is appropriate for a given use. Holiday uses are also included. "Sparkling Salads," the second four-page folder, illustrates the three basic types of salads: accompaniment salad; main dish or complete meal; and the dessert or party salad with oranges and lemons used in interesting ways. Snappy dressings made with oranges and lemons are taste-inviting. A third folder, "Beverage Sampler," has recipes of basic beverages which are all-time favorites.

Chicopee Mills, Inc., has developed a disposable-type towel, "Masslinn," for wiping counters and bars which is non-streaking and non-linting. Made with a cloth-like appearance and texture, it may be rinsed, washed, bleached, and wrung. The towel is durable enough for a week's use, yet costs less than 5 cents.

Caddy Corporation of America's new combination of hot-and-cold mobile cafeteria counters can be set up anywhere, plugged in and ready to serve as an added "fast line" or an independent cafeteria service. In the hot food section, a 2- or 3-pan opening is available. The service unit has standard 12 in. by 20 in. openings to take full- or part-size pans up to 8 in. deep. Made of stainless steel, the hot

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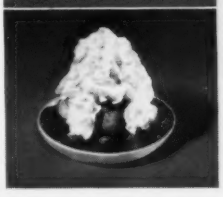

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Rich's *diamond process* Whip Topping adds sparkle to desserts. Whether it's a Bavarian cream or chiffon pastry filling, a delicious whipped topping for fruits or pudding, or a super smooth cake icing, Rich's Whip Topping offers amazing versatility, unmatched performance and low cost-per-serving. Yet, unlike other products which pride themselves on performance characteristics, Rich's Whip Topping sacrifices nothing in flavor. Its taste is "country fresh", pure and sweet.

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food Caddy contains both dry and moist hot food serving units and a heated under-cabinet for holding extra pans of hot food. All heat is electrical and thermostatically controlled. The tray slide is drop type, also the tray shelf at the end. Under-counter space will accommodate a twin compartment Dish Caddy with total capacity of 160, 9-in. plates. The Cold Food Caddy is for milk, ice cream, and dessert service with drop-type tray slide and optional sandwich rack and display case. The top counter extension serves as a cover for the ice cream section or when extended as additional service area. Units are available single or in combination.

A self-contained mobile unit for complete between-meal nourishments is also announced by *Caddy*. The unit has a built-in refrigerator with ice cube trays and shelves for cold storage of milk, juices, butter, as well as beverage jugs for hot coffee or tea. Included is a pop-up toaster, two paper cup dispensers, and storage space for food or supplies. A flat surface above the refrigerator section provides a work surface. The interior is in white baked enamel. Mounted on two swivel and two rigid casters, the unit is completely encircled by a rubber bumper.

A mobile silver caddy to store and dispense silver is offered by *Caddy*. Thirty cylinders are accommodated, sufficient for service of 250 people. Cylinders may be cleaned and sanitized in dishwashers.

Tuna à la king is the latest addition to the *John Sexton & Company* line of convenience foods. Large flakes of white-meat albacore tuna are cooked in a sauce, complemented with bright pimiento and green pepper. Ten 5-oz. servings are packed in a No. 5 can, pre-cooked and ready to heat and serve.

A variety of special menus, table-settings, recipes, and party ideas are highlighted in a colorful eighty-page guide, "Special Occasions," published by *John Sexton & Co.* Eighteen prominent executive chefs and catering managers from around the world contributed. The menus cover a cross section of outstanding Italian, Swedish, German, French, Hawaiian, Spanish, Mexican, English, and American dishes. All recipe weights and measures may be adjusted quickly to any feeding requirement. Sideboard and table plans, sketches of service, and floral arrangements stimulate creative ideas.

The 1961 showing of salad bowls, relish dishes, banquet covers, utility pans and covers are shown in color in an eight-page booklet from *Cambro Inc.* Trays are molded from specifically formed glass mat and selected polyester resins. The fiberglass construction of the banquet covers withstands severe temperature changes and detergents without chipping or denting. Utility pans and covers have a contoured top for easy stacking and storage.

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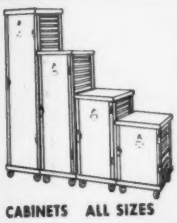
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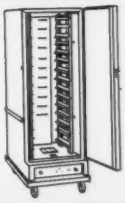
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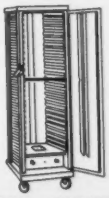
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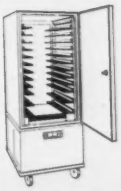
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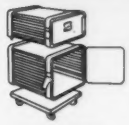
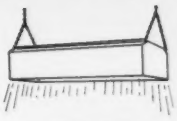

HAND LIFT CABINETS AND DOLLY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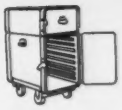
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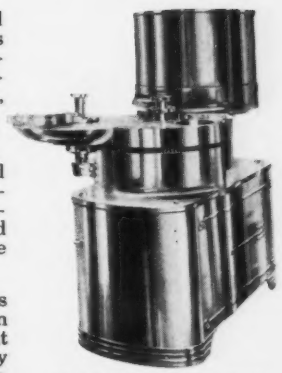
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At last! A *liquid* salt substitute that's double-acting: adds the snap and zest of salt . . . and *boosts* the true flavor of all foods. Jaded appetites perk up . . . foods taste better . . . menus take on new life. And Liquid Saltrol is easily dispensed and measured — no grains and guesswork! Highly stable, Liquid Saltrol is perfect for table use, baking, cooking and canning. Chief ingredients are Potassium Chloride and Ammonium Chloride. Sodium content averages 3 mgs. in 100 grams or less than 1 mg. per oz. Packed 12 — 4 oz. bottles per case.

CELLU Dietetic Foods are the finest of their kind. Over 300 items available.

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New INSTANT Lasco® ORANGE BREAKFAST DRINK GRANULES

Each 4-oz. serving contains more than 70 milligrams of Vitamin C.

✓ *Nothing to add but water*

✓ *High Nutrition—Low Acidity*

So easy to prepare! A 2-lb. vacuum-packed tin of the new Lasco Orange Breakfast Drink Granules and 2 gallons of water make *69 four-ounce servings* . . . delicious, nutritious and economical!

And Your Old Favorites DELUXE Lasco® FROTHY GRANULES

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Each 2½-lb. package (equivalent to 14 lb. raw potatoes) of *Carnation Company's* new Trio Idaho Russet Sliced Potatoes offers quality and portion control. The potatoes may be used in all recipes calling for sliced or diced potatoes. A recipe for country or savory potatoes in twenty-five- or fifty-portion lots is available.

Seven new sizes of bulk rolls and an economy pack of 500 all-purpose interfolded sheets have been added to the Institutional Wrap line of *Reynolds Metals Company.* The foil rolls range in weight from 10 to 50 lb., in width from 12 to 24 in., and length 316 to 2535 ft. The 500-pack of interfolded foil sheets, each 10¾ by 12 in., offers a saving of almost 10 per cent over the 200 pack, which will remain in the line. In addition, a 2000-ft. bulk roll of clear, clinging plastic film has been introduced for institutional use. The film is also available in 1000-ft. rolls packed in dispenser cartons.

An automatic push-button coffee dispenser has been introduced by *Institutional Marketing Division of The Nestlé Company, Inc.* The unit has a built-in heating element. In less than 5 seconds, it meters the proper amount of coffee and piping hot water into 1 cup, pot, or glass serving container by a single push of a button. Up to 500 cups coffee an hour may be served. The unit contains only two moving parts, has no float or timer, requires no pre-brewing, needs no cleaning. Cost per serving is about 1.1 cents. Crosse & Blackwell Restaurant Blend Coffee is specially processed for the dispenser to provide trouble-free operation. A second button provides hot water for tea, chocolate, soups, or other hot beverages.

Electric and gas operated Steam-It, high-speed pressure cookers manufactured by *Market Forge Company* are now equipped with an automatic exhaust silencer. Located in the steam vent of the cooker, the sound of steam being exhausted from the compartment at the end of the cooking period is practically eliminated. All cookers are automatic; by setting the timer, the cooking cycle is put into operation. Single units or combination units of cookers with kettles are available.

Market Forge also announces the addition of a new model to the Markette line of steam cooker-kettle combination units. The new unit houses a steam cooker and two 40-gal. tilting or stationary kettles enclosed in one cabinet. All combinations are available in a wide variety of direct steam, gas, or electrically operated models.

The "Table-Hop," introduced by *Vogel-Peterson Co.,* is a labor-saving device for moving large banquet tables. Table legs "seat" into Table-Hop when table is tilted without any lifting. It wheels, rotates, pushes, or pulls about easily on two wide-tread, rubber-tired casters. It is built of heavy gauge steel with lasting plated finish.